XR-6453

SERVICE MANUAL

East European Model

Model Name Using Similar Mechanism	XR-C213
Tape Transport Mechanism Type	MG-50EX-39

SPECIFICATIONS

Cassette player section

Tape track	4-track 2-channel stereo
Wow and flutter	0.08 % (WRMS)
Frequency response	30 – 18,000 Hz
Signal-to- noise ratio	

Cassette type	Dolby NR off	Dolby B NR
TYPE II, IV	61 dB	67 dB
TYPE I	58 dB	64 dB

Tuner section

FM

Tuning range	65.0 – 74.0 MHz 87.5 – 108.0 MHz
Antenna terminal	External antenna connector
Intermediate frequency	10.7 MHz
Usable sensitivity	8 dBf
Selectivity	75 dB at 400 kHz
Signal-to-noise ratio	65 dB (stereo), 68 dB (mono)
Harmonic distortion at 1 kHz	0.5 % (stereo), 0.3 % (mono)
Separation	35 dB at 1 kHz
Frequency response	30 – 15,000 Hz
Capture ratio	2 dB

MW/LW

Tuning range	MW: 531 – 1,602 kHz LW: 153 – 281 kHz
Antenna terminal	External antenna connector
Intermediate frequency	10.71 MHz/450 kHz
Sensitivity	30 µV

Power amplifier section

Outputs	Speaker outputs (sure seal connectors)
Speaker impedance	4 – 8 ohms
Maximum power output	20 W × 4 (at 4 ohms)

General

Output lead	Power antenna relay control lead Power amplifier control lead
Tone controls	Bass ±8 dB at 100 Hz Treble ±8 dB at 10 kHz
Power requirements	12 V DC car battery (negative ground)
Dimensions	Approx. 188 × 58 × 176 mm (w/h/d)
Mounting dimension	Approx. 182 × 53 × 155 mm (w/h/d)
Mass	Approx. 1.2 kg
Supplied accessories	Power connecting cord (1) Mounting hardware (1 set) Front panel case (1)

Design and specifications are subject to change without notice.

FM/MW/LW CASSETTE CAR STEREO

SONY®

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Flexible Circuit Board Repairing

- Keep the temperature of the soldering iron around 270°C during repairing.
- Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
- Be careful not to apply force on the conductor when soldering or unsoldering.

Notes on chip component replacement

- Never reuse a disconnected chip component.
- Notice that the minus side of a tantalum capacitor may be damaged by heat.

Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation.
"DOLBY" and the double-D symbol ⊡⊡ are trademarks of Dolby Laboratories Licensing Corporation.

Features

General

- **Detachable-front panel** enables you to take the front panel away with you when you leave your car
- **Caution alarm** will be activated if you turn off the ignition key without removing the front panel from the unit.
- Provided with a **digital 24-hour clock**
- **Built-in power amplifier (max. output: 20 W × 4 ch)** enables you to enjoy a 4-speaker system.
- Line outputs for connecting an optional power amplifier.

Cassette player section

- **Dolby B NR* system** reduces hiss noise during tape playback
- **Intro scan function** for playing the first 10 seconds of each track
- **Repeat play function** for playing back a track repeatedly
- **ATA (Automatic Tuner Activation)** for automatically turning on the tuner while fast-forwarding or rewinding a tape
- **Blank skip function** for automatically skipping blanks during tape playback

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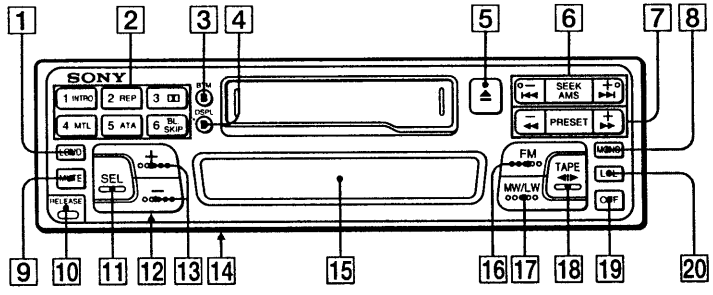
"DOLBY" and the double-D symbol ⧈ are trademarks of Dolby Laboratories Licensing Corporation.

Tuner section

- Up to 30 stations can be preset: 18 stations on FM and 6 stations on MW and LW.
- **BTM (Best Tuning Memory) function** automatically searches and stores the stations with the strongest signals on the preset number buttons in order of frequency

Location of Controls



Refer to the pages in ● for details.

1 **LOUD (loudness) button ❾**

2 **During radio reception:**
Preset number buttons ❽

During tape playback:

1 INTRO **INTRO button ❼**

2 REP **REPEAT button ❼**

3 DD **DD (Dolby B NR) button ❻**

4 MTL **MTL (Cassette type select) button ❻**

5 ATA **ATA (Automatic Tuner Activation) button ❼**

6 BL SKIP **BL.SKIP button ❼❿**

3 **BTM (Best Tuning Memory) button ❽**

4 **DSPL (display mode change/time set) button ❺**

5 **⏏ (eject) button ❻❾**

6 **SEEK/AMS button ❻❼**

7 **PRESET button ❻❼❽❾**

8 **MONO button ❼**

9 **MUTE button ❾**

10 **RELEASE (front panel release) button ❹❿**

11 **SEL (control mode select) button ❺❾❿**

12 **Reset button (located on the front side of the unit hidden by the front panel) ❹**
Press this button when you use this unit for the first time, when you have changed the car battery, or when the buttons of this unit do not function properly.

13 **(volume/bass/treble/balance/fader control) button ❺❾**

14 **POWER SELECT switch (located on the bottom of the unit)**
See "POWER SELECT Switch" in the installation/connections manual.

15 **Display window**

16 **FM (radio on/band select) button ❻❼❽**

17 **MW/LW (radio on/band select) button ❻❼❽**

18 **TAPE/◀II▶ (playback/transport direction change) button ❻**

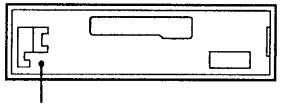
19 **OFF button ❹❺❻❾**

20 **LCL (local seek adjust) button ❼**

This section is extracted from instruction manual.

Precautions

- Before operating the unit for the first time or after replacing the car battery, press the reset button with a ball-point pen etc., and then start operating the unit.



Reset button

- If your car was parked in direct sunlight resulting in a considerable rise in temperature inside the car, allow the unit to cool off before operating it.
- If no power is being supplied to the unit, check the connections first. If everything is in order, check the fuse.
- If no sound comes from the speakers of a 2-speaker system, set the fader control to the centre position.

If you have any questions or problems concerning your unit that are not covered in this manual, please consult your nearest Sony dealer.

Notes on Cassettes

Cassette care

- Do not touch the tape surface of a cassette, as any dirt or dust will contaminate the heads.
- Keep cassettes away from equipment with built-in magnets such as speakers and amplifiers, as erasure or distortion on the recorded tape could occur.
- Do not expose cassettes to direct sunlight, extremely cold temperatures or moisture.
- When the tape is played back for a long period, the cassette shell may become warm because of the built-in power amplifier. However, this is not a sign of a malfunction.

Cassettes longer than 90 minutes

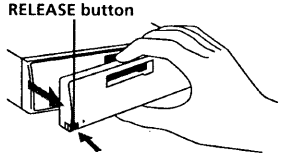
The use of cassettes longer than 90 minutes is not recommended except for long continuous play. The tapes used for these cassettes are very thin and tend to be stretched easily. Frequent playing and stopping of these tapes may cause them to be pulled into the cassette deck mechanism.

Detaching and Attaching the Front Panel

The front panel of this unit can be detached in order to prevent the unit from being stolen.

Detaching the Front Panel

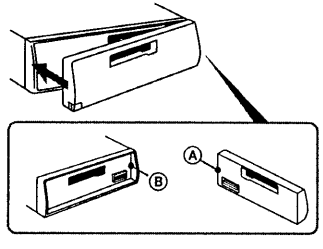
Before detaching the front panel, be sure to press the OFF button first. Then press the RELEASE button to open up the front panel and detach the panel by pulling it towards you as illustrated.



Be sure not to drop the panel when detaching it from the unit.

Attaching the Front Panel

Apply the right hand side of the front panel to the unit by attaching part Ⓐ of the front panel to part Ⓑ of the unit as illustrated and push until it clicks.



Notes

- *Make sure that the front panel is the right way up when attaching it to the unit as it cannot be attached upside down.*
- *Do not press the front panel hard against the unit when attaching it to the unit. It can easily be attached by pressing it lightly against the unit.*
- *When you carry the front panel with you, put it in the supplied front panel case.*
- *Do not press hard or give excessive pressure to the display windows of the front panel.*
- *Before removing the front panel, be sure to turn the power off. However, if you press the RELEASE button to detach the panel while the unit is still turned on, the power will be automatically turned off in order to protect the speakers from being damaged.*
- *Do not expose the front panel to direct sunlight, heat sources such as hot air ducts or leave it in a humid place. Never leave it on the dashboard etc. of a car parked in direct sunlight where there may be a considerable rise in temperature inside the car.*

Caution alarm

If you turn the ignition key to the OFF position without removing the front panel, the caution alarm will be activated and a beep tone will be heard for a few seconds (only when the POWER SELECT switch is set to the Ⓐ position).

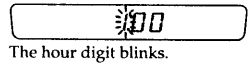
Setting the Clock

The clock has a 24-hour digital indication.

For example, setting it to 10:08

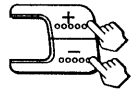
1 Display the time.
(Press the OFF or the DSPL Ⓓ button during the unit operation.)

2 Press the DSPL Ⓓ button for more than two seconds.



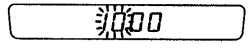
The hour digit blinks.

Set the hour digits.



to go forward

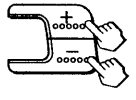
to go back



3 Press the SEL button momentarily.

The minute digit blinks.

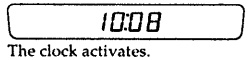
Set the minute digits.



to go forward

to go back

4 Press the DSPL Ⓓ button momentarily.



The clock activates.

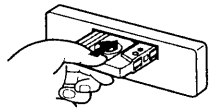
Note

If the POWER SELECT switch on the bottom of unit is set to the Ⓑ position, the clock cannot be set unless the power is turned on. Set the clock after you have turned on the radio, or started cassette playback.

Cassette Player Operation

Listening to Tape Playback

After inserting the cassette, playback will start automatically.



If a cassette is already inserted, press the [TAPE] button to start playback.
If you press during playback, the tape transport direction will change.

Indication of Tape Transport Direction

The side facing up is being played.

The side facing down is being played.

To stop playback,
eject the cassette by pressing the [⏏] button or press the OFF button.
Playback stops also when you select radio by pressing the [FM] or [MW/LW] button.

Ejecting the Cassette

Press the [⏏] button.

Fast-winding the Tape

Rewind — Fast-forward

To start playback during rewinding or fast-forwarding, press the [TAPE] button.

Playing a Tape Recorded in the Dolby B NR System

Press the [3 DOLBY NR] button when you want to listen to a tape recorded in the Dolby B NR system. → "DOLBY NR" appears in the display.
To cancel, press again.

Playing a CrO_2 or Metal Tape

Press the [4 MTL] button when you want to listen to a CrO_2 (TYPE II) or metal (TYPE IV) tape. → "MTL" will appear on the display.
To cancel, press again.

Locating the Beginnings of the Tracks

— AMS (Automatic Music Sensor) Function

During playback, press either side of the SEEK/AMS button the number of times you wish to skip the tracks.

To locate the previous tracks — To locate the succeeding tracks

Up to nine tracks can be skipped.

If the blanks between the tracks are shorter than four seconds, or if there are noises, the AMS function will not work. Also, the unit may read long sections of low volume music or quiet sections on a track as blanks between tracks.

Searching the Desired Track — Intro Scan Function

Press the [1 INTRO] button during playback. → "INTRO" appears on the display.
The first 10 seconds of all the tracks are played. When you find the desired track, press the button once more. The unit returns to the normal playback mode.

Playing Tracks Repeatedly

— Repeat Play Function

Press the [2 REP] button during playback. → "REP" appears on the display.
When the currently played track is over, it will be played again from the beginning.
To cancel this mode, press the button again.

Radio Reception during Fast-forwarding or Rewinding of a Tape

— ATA (Automatic Tuner Activation) Function

Press the [5 ATA] button during playback. → "ATA" appears on the display.
When fast-forwarding or rewinding with the [PRESET] button, the tuner will turn on automatically.

Skipping Blanks Automatically during Tape Playback — Blank Skip Function

Press the [6 BL SKIP] button during playback. → "BL.SKIP" appears on the display.
Blanks longer than eight seconds will be automatically skipped during tape playback.

Radio Reception

Searching for the Stations Automatically

— Automatic Tuning

1 Select the desired band.

FM1 → FM2 → FM3 → FM1

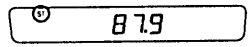
MW ↔ LW

2 Press either side of the SEEK/AMS button to search for the station (automatic tuning).

For lower frequencies — **For higher frequencies**

The scanning stops when a station is received. Press either side of the button repeatedly until the desired station is received.

When an FM stereo program with a sufficient signal strength is tuned in,



The "ST" indication will appear.

To avoid the automatic tuning from stopping on stations too frequently (local seek mode), press the [LCL] button momentarily to get the "LCL" indication.
Only the stations with relatively strong signals can be tuned in. The local seek mode functions only when the automatic tuning is in operation.

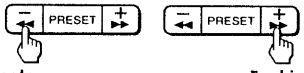
If FM Stereo Reception is Poor — Monaural Mode

Press the [MONO] button momentarily. → "MONO" appears on the display.
The sound will improve, but it will become monaural.

Tuning in by Adjusting the Frequency — Manual Tuning

1 Select the desired band.

2 Press and hold either side of the PRESET button.
Release the button when the desired station is received.



For lower frequencies

For higher frequencies

PREVENTING ACCIDENTS!
When tuning in during driving, use the automatic tuning and the memory preset search function (page 9) instead of the manual tuning.

Memorizing Stations Automatically

— BTM (Best Tuning Memory) Function

This function selects from the currently received band the stations with the strongest signals and memorizes them in order of their frequency.

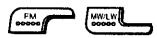
1 Select the desired band.

2 Press the BTM (B) button for more than two seconds.
- When there is no preset number indicated on the display window, stations will be stored on all preset number buttons on the currently selected band.
- When there is a preset number indicated on the display window, the unit will store stations on all preset number buttons from the one currently displayed.

For example, when you select FM2 and preset number 3 is displayed,
the operation will start from preset number 3 on FM2, and will stop at preset number 6 on FM3.

Memorizing Only the Desired Stations

1 Select the desired band.



2 Tune in the station which you wish to store on the preset number button.

3 Keep the desired preset number button (1 INTRO to 6 BL SKIP) pressed for about two seconds until you hear a beep tone.

The number of the pressed preset number button appears on the display window.

Up to 6 stations on each band (FM1, FM2, FM3, MW and LW) can be stored on the preset number buttons in order of your choice. Therefore, 18 stations can be memorized on FM.
If you try to store another station on the same preset number button, the previously stored station will be erased.

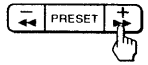
Receiving the Memorized Stations

1 Select the desired band.

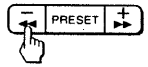
2 Press momentarily the preset number button (1 INTRO to 6 BL SKIP) on which the desired station is stored.

Note
If you press the preset number button for more than two seconds, the currently received station will be memorized again. To receive the previously memorized station, make sure that the preset number button is pressed only momentarily.

Press either side of the PRESET button momentarily to receive in order the stations stored in the memory (Preset Search Function).



Press momentarily
1 → 2 → ··· → 5 → 6 → 1 → ···



Press momentarily
1 → 6 → 5 → ··· → 2 → 1 → ···

Other Functions

Adjusting the Sound Characteristics

1 Select the item you want to adjust by pressing the SEL button repeatedly.

VOL (volume) → BAS (bass) → TRE (treble) → BAL (balance) → FAD (fader) → VOL (volume)

2 Adjust the selected item by pressing either the + or − button.

Adjust within three seconds after selecting. (After three seconds the button will again serve as volume control button.)

Enjoying Bass and Treble even at Low Volume

— Loudness Function

Press the LOUD button. → "LOUD" will appear on the display.
Bass and treble will be reinforced. To cancel, press again.

Muting the Sound Quickly

— Mute Function

Press the MUTE button. → The "MUTE" indication flashes.
The sound is muted at once. To restore the previous volume level, press again.

This function will be also cancelled when:
— the + or OFF button is pressed.
— ejecting a cassette by pressing the ⏏ button during tape playback.

Muting the Beep Tone

Press the [6 BL SKIP] button while pressing the [SEL] button.

To obtain the beep tone again, press these buttons once more.

Maintenance

Fuse Replacement

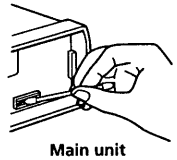
When replacing the fuse, be sure to use one with the correct amperage which is stated on the fuse case. Never use a fuse whose amperage rating exceeds the one supplied to the unit as this could cause a malfunction of the unit.

Warning

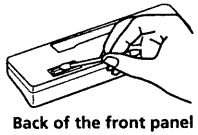
Use a fuse with the specified amperage.
Use of a fuse with higher amperage may cause serious damage.

Cleaning the Connectors

The unit may not function properly if the connectors between the unit and the front panel are not clean. In order to prevent this, open the front panel by pressing the RELEASE button, then detach it and clean with a cotton swab which was dipped in alcohol. Do not apply too much force. Otherwise, the connector may get damaged.



Main unit



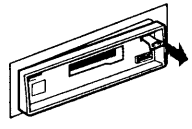
Back of the front panel

Dismounting the Unit

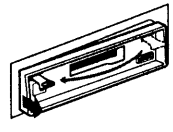
1

Release key (supplied)

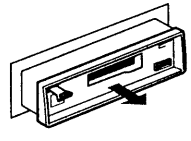
2



3



4



Installation

Precautions

- Do not tamper with the four holes on the upper surface of the unit. They are for tuner adjustments to be done only by service technicians.
- Choose the installation location carefully so that the unit will not hamper the driver during driving.
- Avoid installing the unit where it would be subject to high temperatures, such as from direct sunlight or hot air from the heater, or where it would be subject to dust, dirt or excessive vibration.
- Use only the supplied mounting hardware for a safe and secure installation.

Mounting angle adjustment

Adjust the mounting angle to less than 20°.

How to Detach and Attach the Front Panel

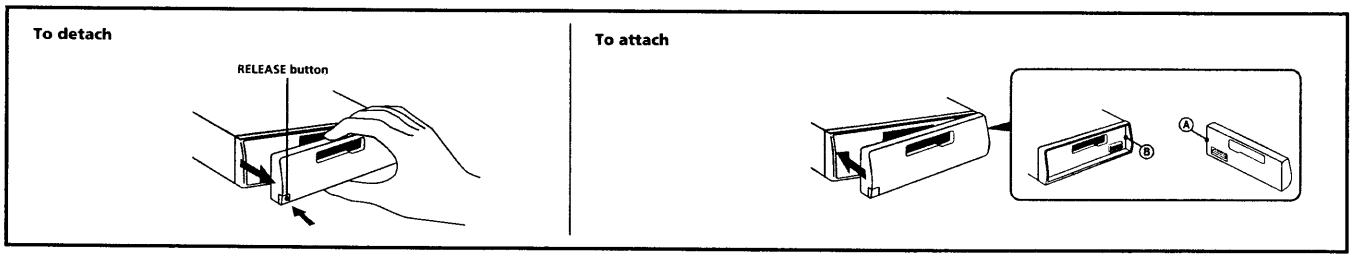
Before installing the unit, detach the front panel.

To detach

Press the RELEASE button to open up the front panel, then pull it out.

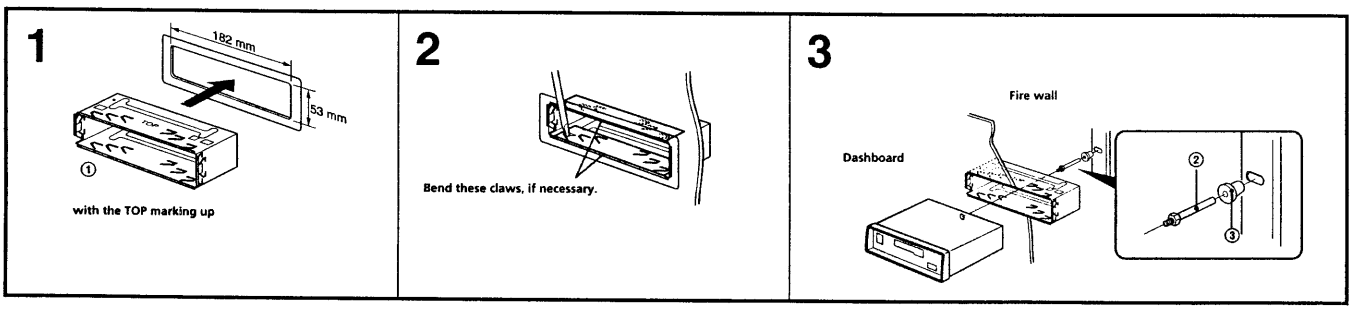
To attach

Align the parts Ⓐ and Ⓑ, and push the front panel until it clicks.



Mounting Example

Installation in the dashboard



Connections

Caution

- This unit is designed for negative ground 12 V DC operation only.
- Before making connections, disconnect the ground terminal of the car battery to avoid short circuits.
- Connect the **yellow** and **red** power input leads only after all other leads have been connected.
- Be sure to connect the red power input lead to the positive 12 V power terminal which is energized when the ignition key is in the accessory position.
- **Run all ground wires to a common ground point.**

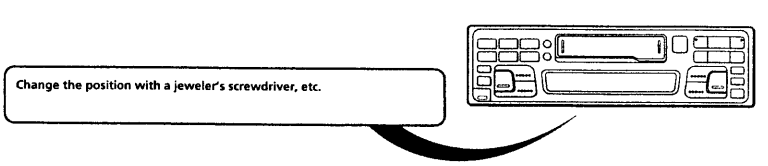
If Your Car has No Accessory Position on the Ignition Key Switch

— POWER SELECT Switch

The illumination on the front panel is factory-set to be turned on even when the unit is not being played. However, this setting may cause some car battery wear **if your car no accessory position on the ignition key switch.** To avoid this battery wear, **set the POWER SELECT switch located on the bottom of the unit to the Ⓑ position, then press the reset button.** The illumination is reset to stay off while the unit is not being played.

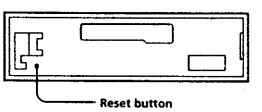
Note

The caution alarm for the front panel is not activated when the POWER SELECT switch is set to the Ⓑ position.

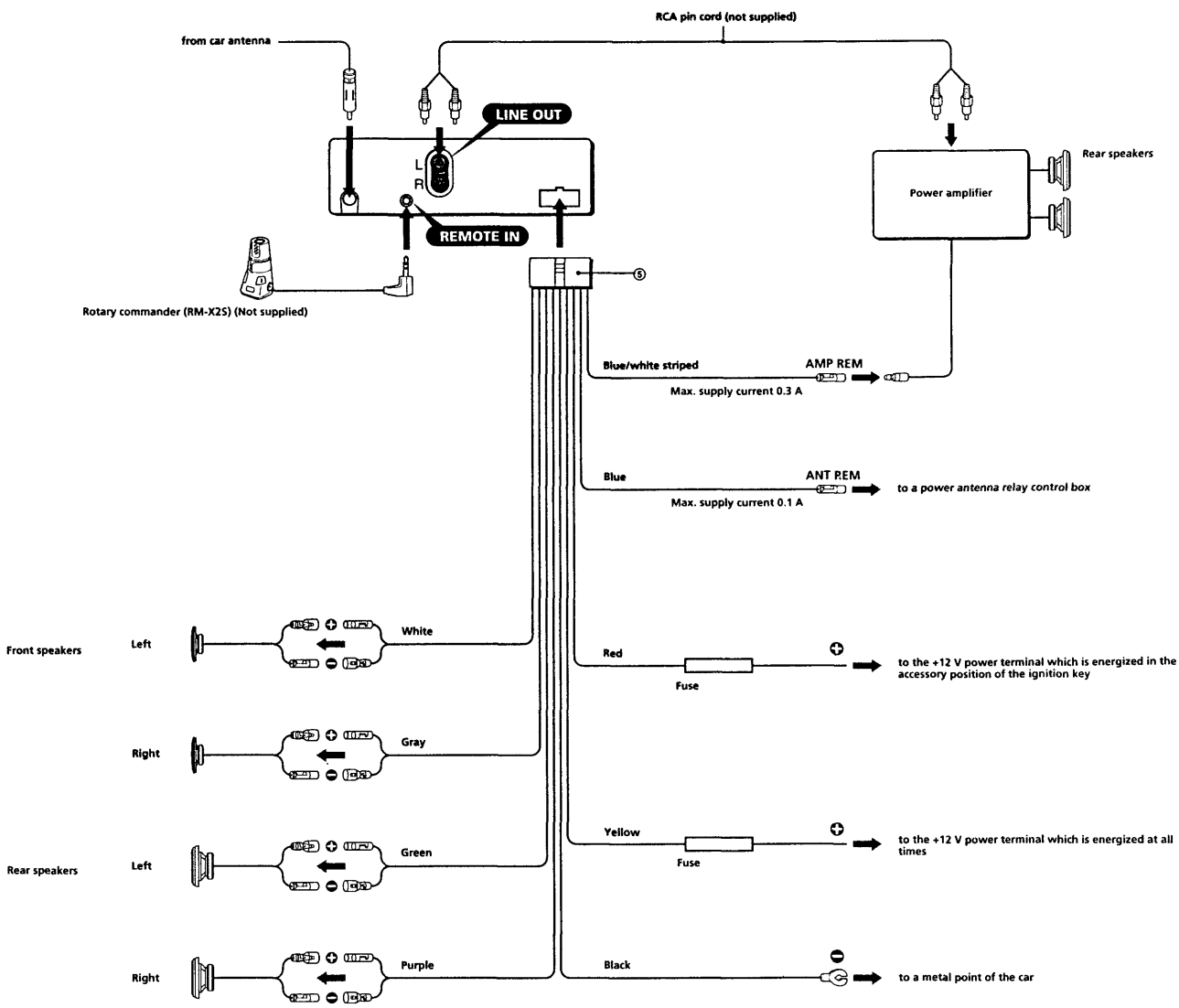


Reset Button

When the installation and connections are over, be sure to press the reset button with a ball-point pen etc.



Connections of Example



Notes on the control leads

- *The power antenna control lead (blue) supplies +12 V DC when you turn on the tuner or when you activate the ATA (Automatic Tuner Activation) function*
- *A power antenna without relay box cannot be used with this unit*

Memory hold connection

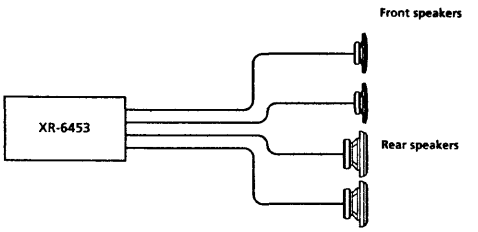
When the yellow power input lead is connected, power will always be supplied to the memory circuit even when the ignition key is turned off

Notes on speaker connection

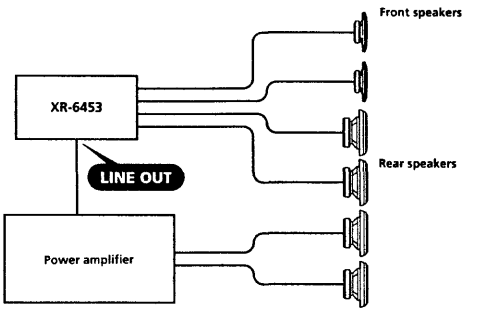
- *Before connecting the speakers, turn the unit off*
- *Use speakers with an impedance of 4 to 8 ohms, and with adequate power handling capacities. Otherwise, the speakers may be damaged*
- *Do not connect the terminals of the speaker system to the car chassis, and do not connect the terminals of the right speaker with those of the left speaker*
- *Do not attempt to connect the speakers in parallel*
- *Do not connect any active speakers (with built-in amplifiers) to the speaker terminals of the unit. Doing so may damage the active speakers. Therefore, be sure to connect passive speakers to these terminals*

Connection Diagram

Example 1

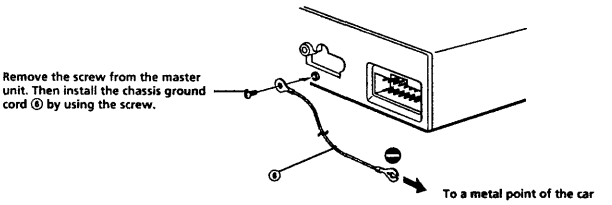


Example 2



Note for Connecting

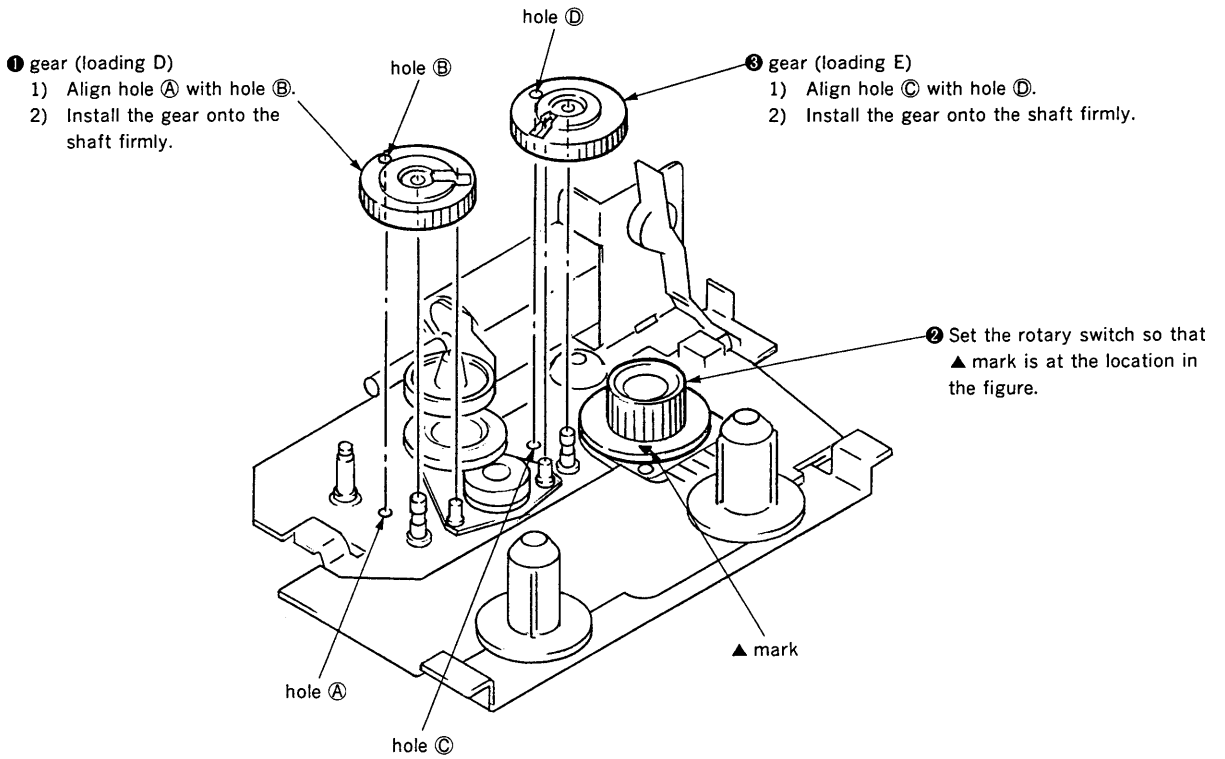
If there is alternator noise (a whining sound when raising engine speed), ground the master unit by connecting it to a metal point of the car with the supplied chassis ground cord ⑧.



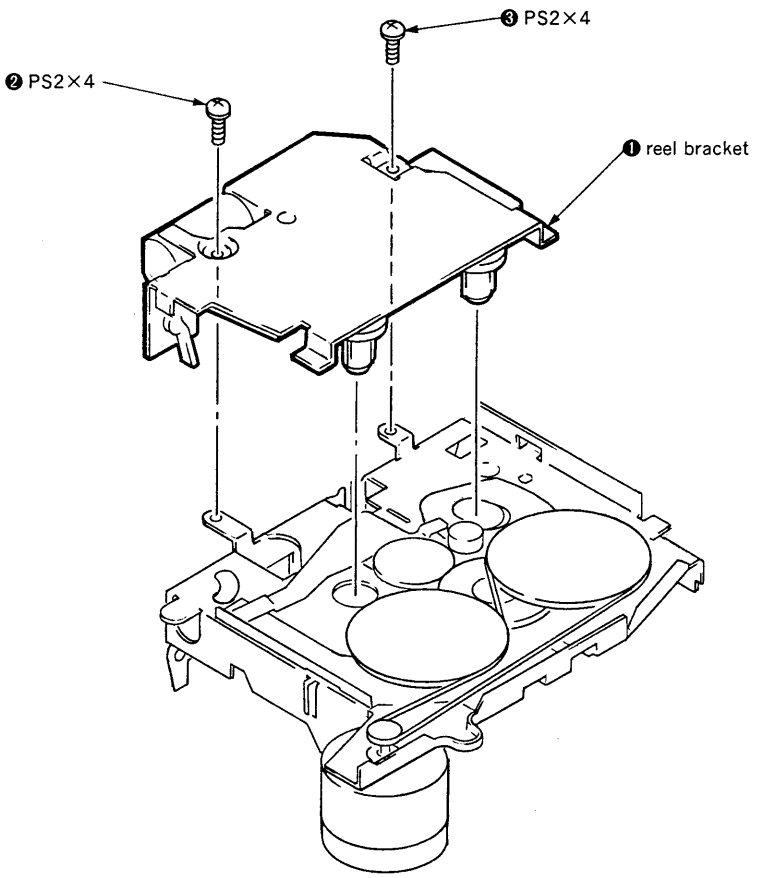
SECTION 2
DISASSEMBLY

Note : Follow the disassembly procedure in the numerical order given.

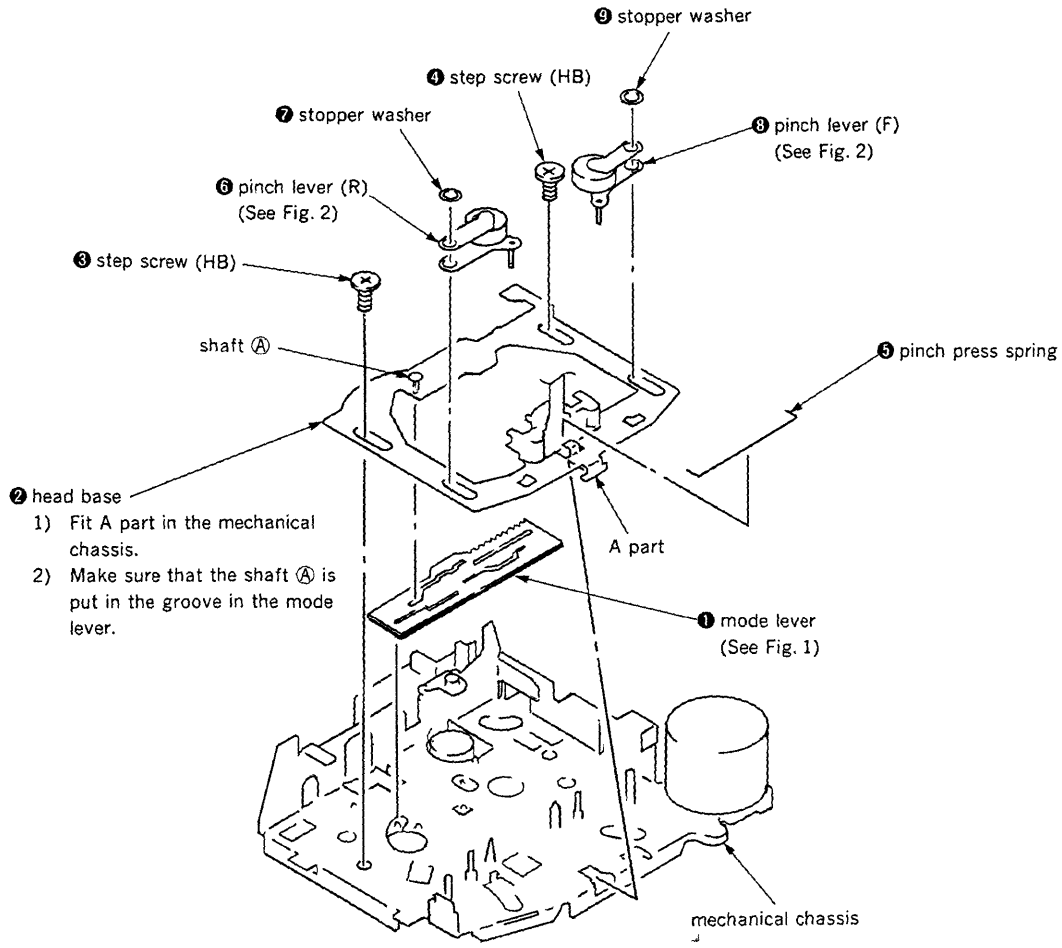
2-1. INSTALLING THE LOADING GEARS


❶ gear (loading D)
1) Align hole Ⓐ with hole Ⓑ.
2) Install the gear onto the shaft firmly.
hole Ⓑ
hole Ⓓ
❸ gear (loading E)
1) Align hole Ⓒ with hole Ⓓ.
2) Install the gear onto the shaft firmly.
❷ Set the rotary switch so that ▲ mark is at the location in the figure.
▲ mark
hole Ⓐ
hole Ⓒ

2-2. INSTALLING THE REEL BRACKET



2-3. INSTALLING THE MODE LEVER AND PINCH LEVERS


❾ stopper washer
❹ step screw (HB)
❼ stopper washer
❽ pinch lever (F)
(See Fig. 2)
❻ pinch lever (R)
(See Fig. 2)
❸ step screw (HB)
shaft Ⓐ
❺ pinch press spring
❷ head base
1) Fit A part in the mechanical chassis.
2) Make sure that the shaft Ⓐ is put in the groove in the mode lever.
A part
❶ mode lever
(See Fig. 1)
mechanical chassis

1) Align • mark on the rotary switch with hole on the mode lever.
2) Make sure that the two shafts and three projections are located as shown below.

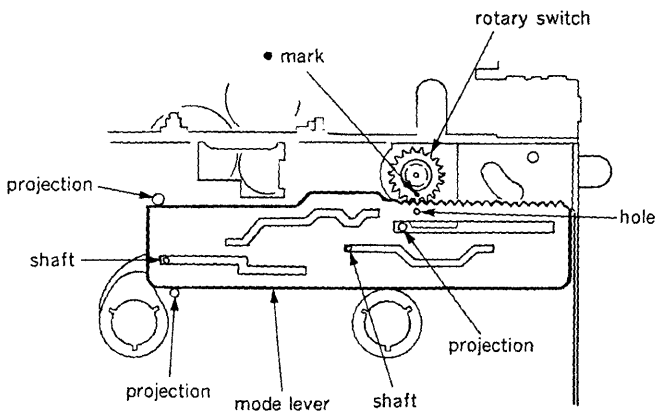


Fig. 1

1) Put the shafts of the pinch levers in the pinch press spring on its head side.

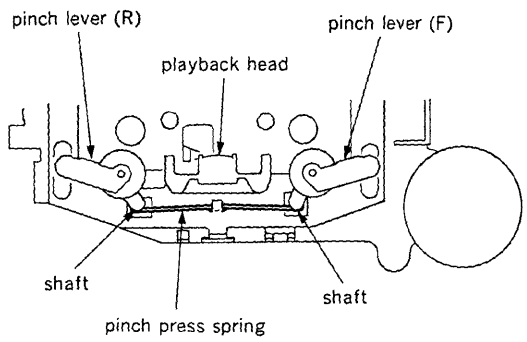


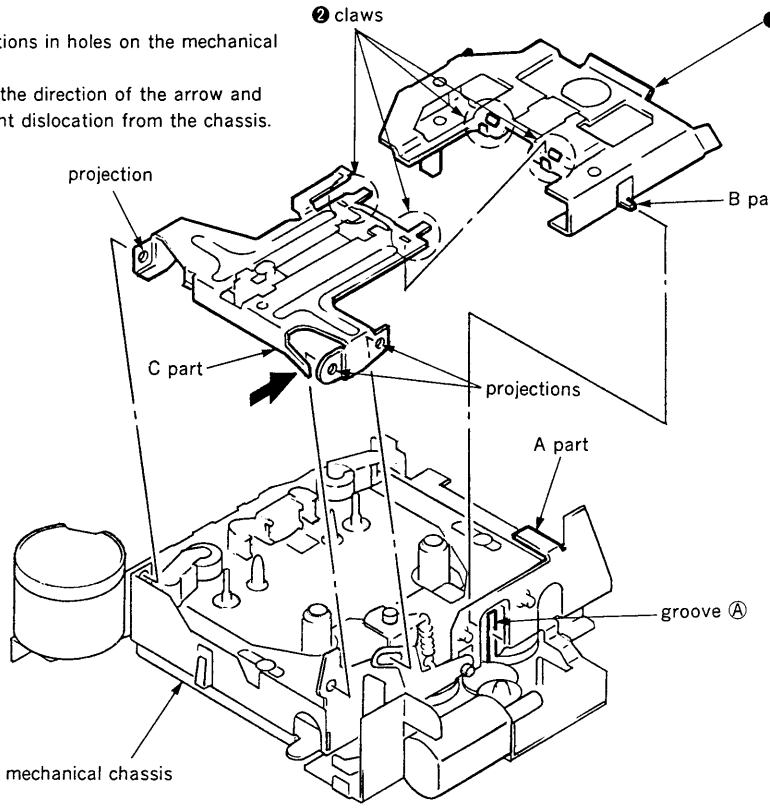
Fig. 2

2-4. INSTALLING THE CASSETTE HOUSING

❸ housing hanger
1) Fit three projections in holes on the mechanical chassis.
2) Bend C part in the direction of the arrow and fasten to prevent dislocation from the chassis.

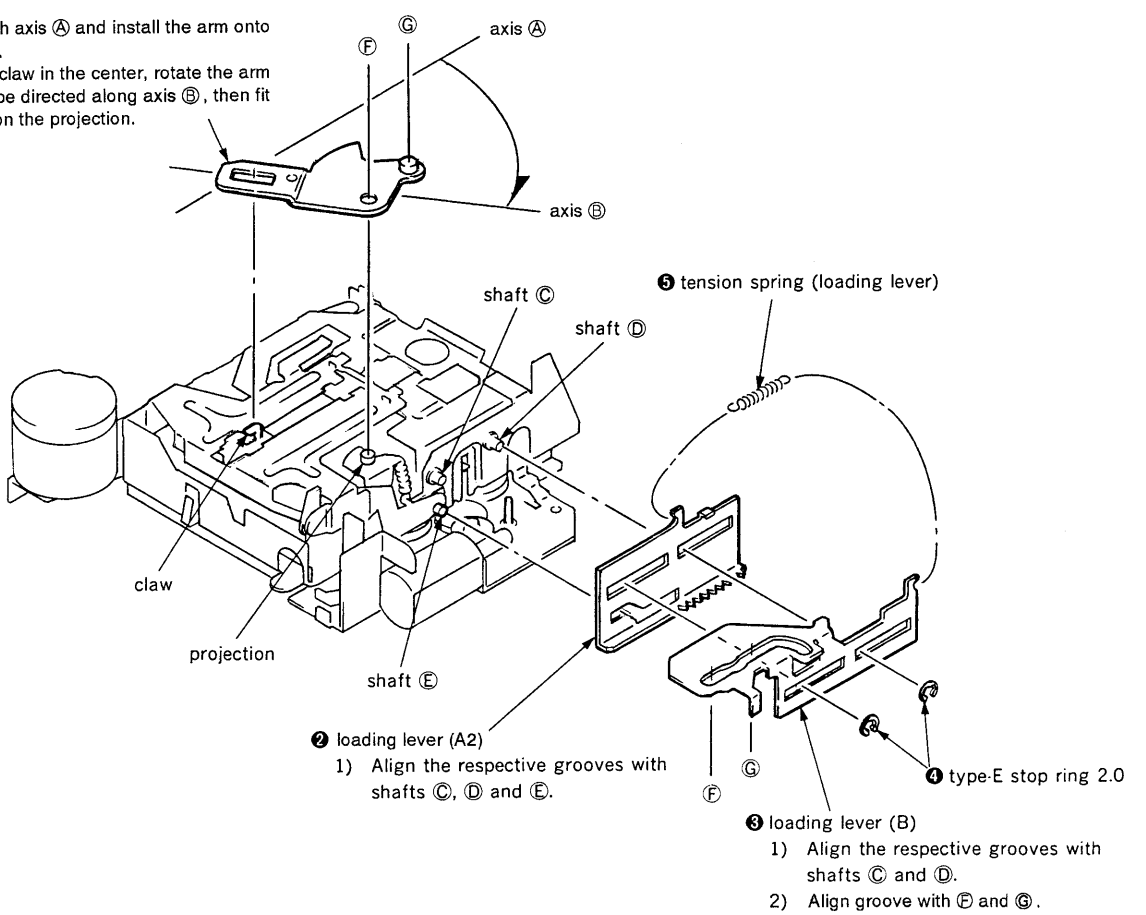
❷ claws

❶ cassette housing
1) put the cassette housing under A part.
2) Fit B part in groove Ⓐ.

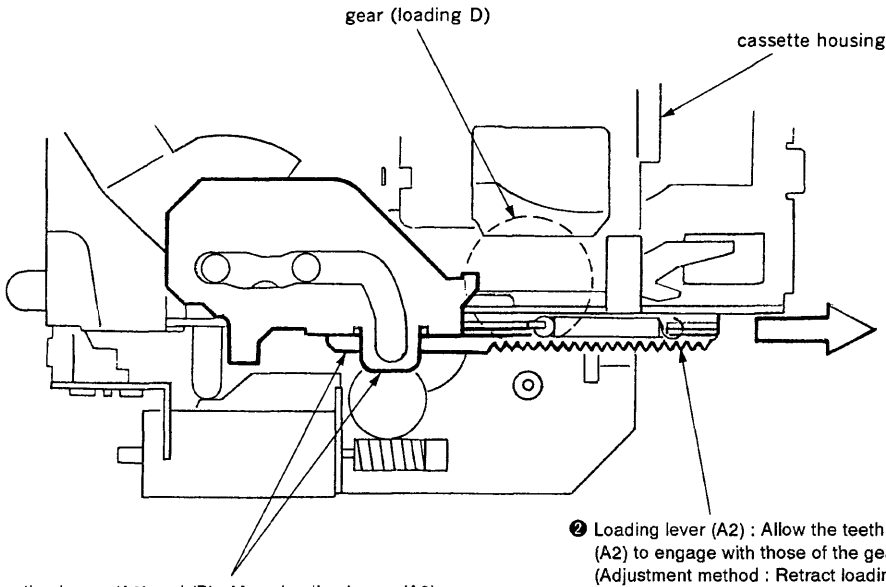


2-5. INSTALLING THE LOADING LEVER

❶ suction arm
1) Align with axis Ⓐ and install the arm onto the claw.
2) With the claw in the center, rotate the arm so as to be directed along axis Ⓑ, then fit the arm on the projection.



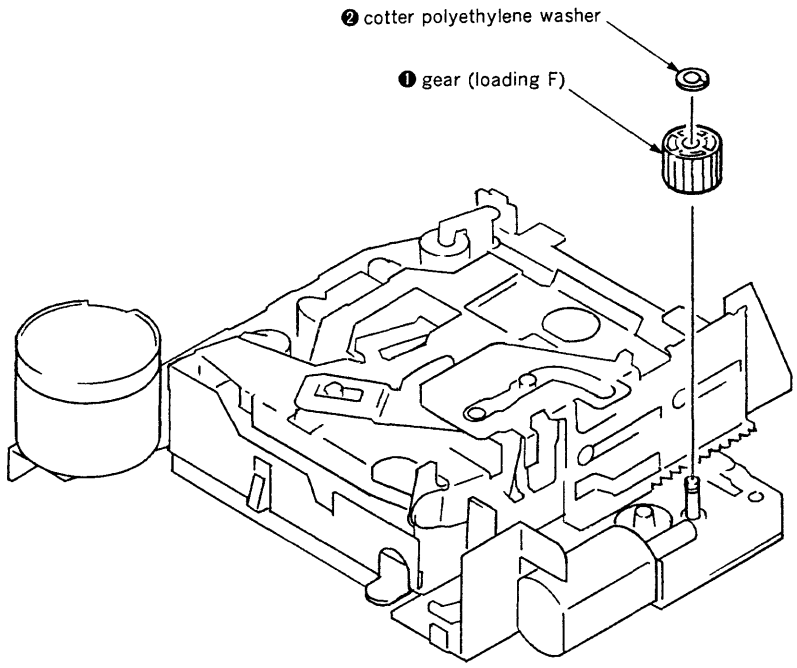
2-6. POSITIONING THE LOADING LEVERS



❷ Loading lever (A2) : Allow the teeth of loading lever (A2) to engage with those of the gear (loading D). (Adjustment method : Retract loading lever (A2) by 0.2 to 0.5mm in the opposite direction of the arrow.)

❶ Loading levers (A2) and (B) : Move loading levers (A2) and (B) in the direction of the arrow. (The cassette housing is put down fully at this time.)

2-7. INSTALLING THE GEAR (LOADING F)



SECTION 3
MECHANICAL ADJUSTMENTS

PRECAUTION

1. Wipe the following components with an absorbent cotton cloth moistened with alcohol before adjustment :
   PB head　　Pinch roller
   Idlers　　Rubber belts
   Capstan
2. Demagnetize the PB head using a head demagnetizer.
3. Be careful not to use a magnetized screwdriver
4. After the adjustments is completed, lock the adjustment parts using screws.
5. Unless otherwise specified, make adjustments at the specified voltage (14.4V)

Torque Measurement

Mode	Torque Meter	Meter Reading
FWD	CQ-102C	30 – 65g•cm (0.42 – 0.90 oz•inch)
FWD Back Tension		0.5 – 4.5g•cm (0.007 – 0.062 oz•inch)
REV	CQ-102RC	30 – 65g•cm (0.42 – 0.90 oz•inch)
REV Back Tension		0.5 – 4.5g•cm (0.007 – 0.062 oz•inch)
FF, REW	CQ-201B	60 – 200g•cm (0.84 – 2.78 oz•inch)

Tape Tension Measurement

Mode	Torque Meter	Meter Reading
FWD	CQ-403A	more than 90g (more than 3.18 oz)
REV	CQ-403R	

Test Tape

Type	Signal	Used for
PA-D400	400Hz, 0dB	DOLBY Level
WS-48A	3kHz, 0dB	Tape Speed Adjustment

SECTION 4
ELECTRICAL ADJUSTMENTS

TEST MODE

This set have the test mode function, in the test mode. FM Auto Scan/Stop Level and AM Auto Scan/Stop Level adjustments can be performed easier than it in ordinaly procedure.

<Set the Test Mode>

1. Set the "OFF" mode.
2. Push the preset [4] button.
3. Push the preset [5] button.
4. Press the preset [1] button for two seconds.
5. Then the display indicates five patterns and stops, the test mode is set.

<Rerease the Test mode>

1. Push the "OFF" button.

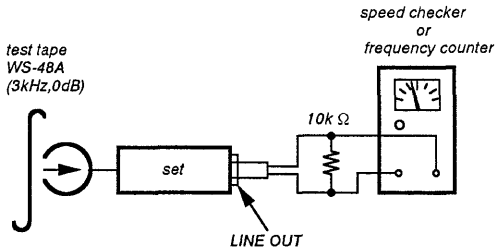
See the adjustment location from on page 19 for the adjustment.

DECK SECTION 0 dB=0.775V

Capstan Motor Tape Speed Adjustment

Procedure :

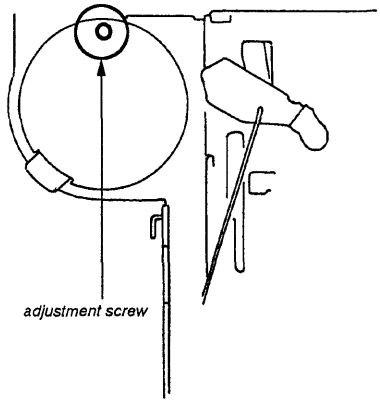
1. Put the set into the FWD PB mode.



Specification : Constant speed

Speed checker	frequency counter
− 1.5 to +2.5%	2,955 to 3,075 Hz

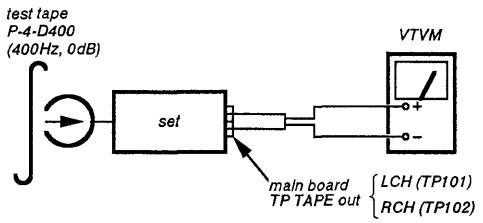
Adjustment Location : Capstan motor volume



DOLBY Level Adjustment

Setting :

(Dolby NR) button : OFF
SEL (volume) button : Maximum
SEL (balance) button : Center
SEL (bass) button : Center
SEL (treble) button : Center



Procedure :

1. Put the set into the FWD PB mode.
2. Adjust RV101 (L-CH) and RV201 (R-CH) so that VTVM reading on − 4.7dB ± 0.5dB (0.43 − 0.47V).

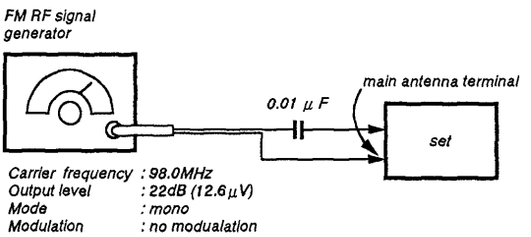
Adjustment Location : MAIN board (See page 19)

TUNER SECTION 0 dB=1 μV

Cautions during repair
When the front end is defective, replace it by a new one because its internal block is difficult to repair.

FM Auto Scan Stop Level Adjustment

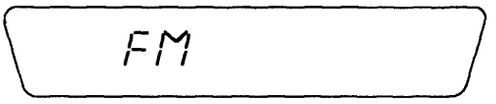
Setting :
TUNER button : FM



Procedure :

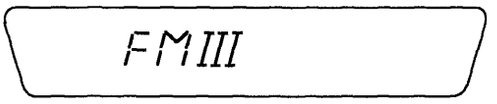
1. Set to the test mode. (See page 16)
2. Push the FM button.

Main Display



3. Push the preset SEEK/AMS + ⏭ button.
4. Adjust with the volume RV3 on TU1 so that the "FM" indication turns to "FMIII" indication on the main display window.
   But in case of already indicated "FMIII", turn the RV3 so that put out light "III" indication and adjustment.

Main Display



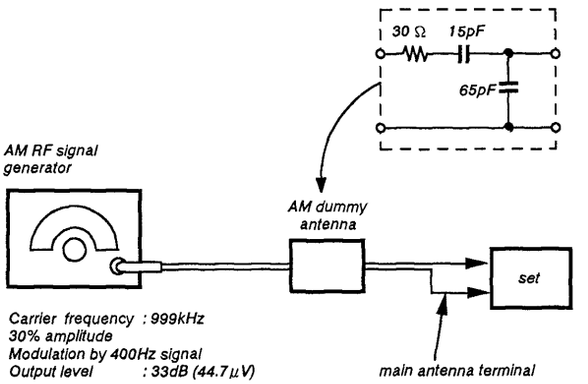
Specification : Stop sensitivity : 22dB ± 3dB

Note : "III" indication of main display was align voltage of TP (SD).
TP (SD) voltage 0V → "III" light off
TP (SD) voltage 5V → "III" light on

Adjustment Location : Main board (TU1) (See page 19)

AM Auto Scan Stop Level Adjustment

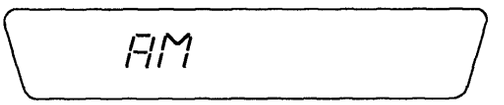
Setting :
TUNER button : MW (LW)



Procedure :

1. Set to the test mode. (See page 16)
2. Push the MW (LW) button.

Main Display



3. Adjust with the volume RV1 on TU1 so that the "AM" indication turns to "AMIII" indication on the main display window.
   But in case of already indicated "AMIII", turn the RV1 so that put out light "III" indication and adjustment.

Main Display

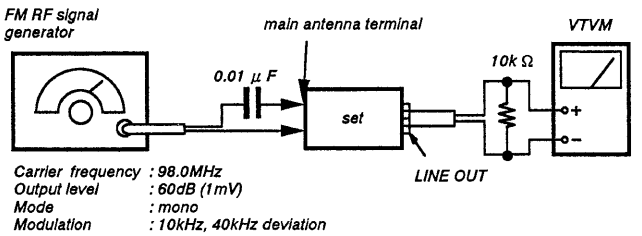
Specification : Stop sensitivity : 33dB ± 3dB

Note : "III" indication of main display was align voltage of TP (SD).
TP (SD) voltage 0V → "III" light off
TP (SD) voltage 5V → "III" light on

Adjustment Location : Main board (TU1) (See page 19)

High Cut Control Effect Adjustment

Setting :
TUNER button : FM



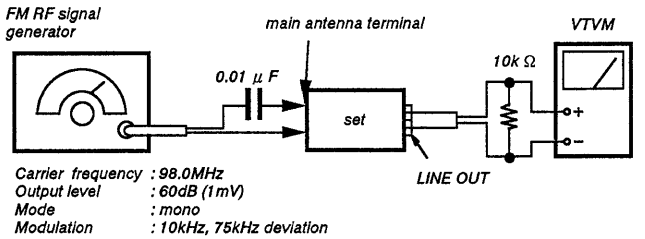
Procedure :

1. Tune the 98.0MHz.
2. The then output level is supposing that (A) dB.
3. Adjust with the volume RV2 on TU1 so that the output Level is (A) − 5 ± 2dB then signal generator input set to 20dB.

Adjustment Location : Main board (TU1) (See page 19)

FM Noise Focus Adjustment

Setting :
TUNER button : FM



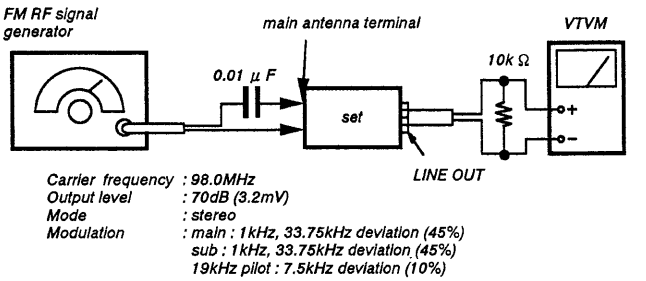
Procedure :

1. Tune the 98.0MHz.
2. The then output level is supposing that (B) dB.
3. Adjust with the volume RV5 on TU1 so that the output Level is (B) − 30 ± 3dB then signal generator input set to − 20dB.

Adjustment Location : Main board (TU1) (See page 19)

FM Stereo Separation (30dB) Adjustment

Setting :
TUNER button : FM



Procedure :

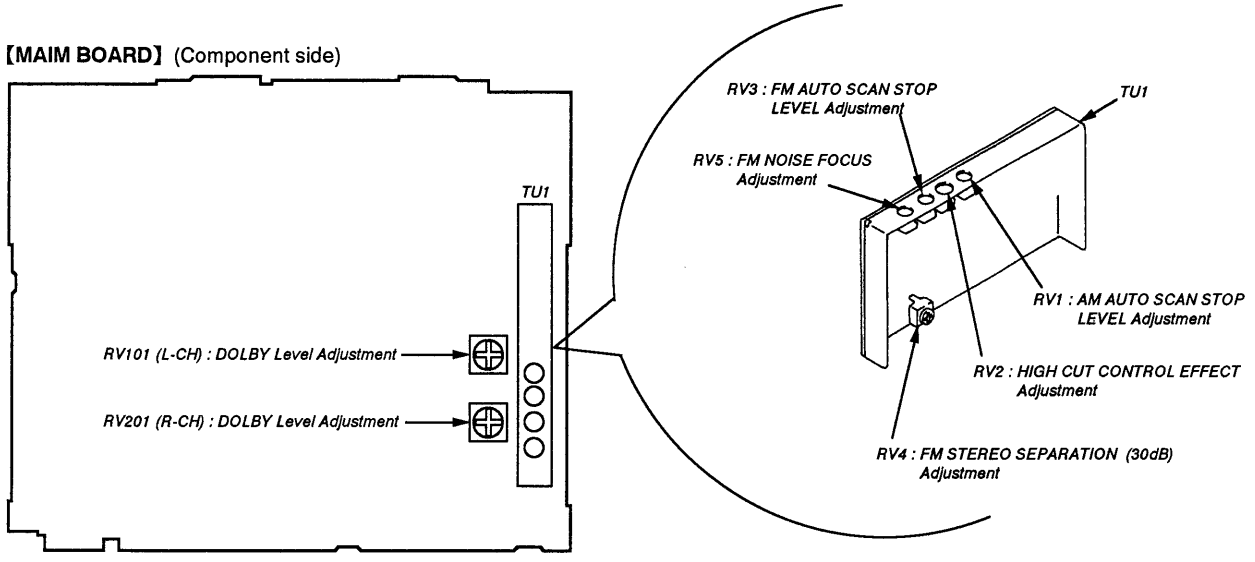
FM stereo signal generator output channel	VTVM connection	VTVM reading (dB)
L-CH	L-CH	Ⓐ
R-CH	L-CH	Ⓑ Adjust RV4 for minimum reading.
R-CH	R-CH	Ⓒ
L-CH	R-CH	Ⓓ Adjust RV4 for minimum reading.

L-CH Stereo separation : Ⓐ − Ⓑ
R-CH Stereo separation : Ⓒ − Ⓓ
The separations of both channels should be equal.

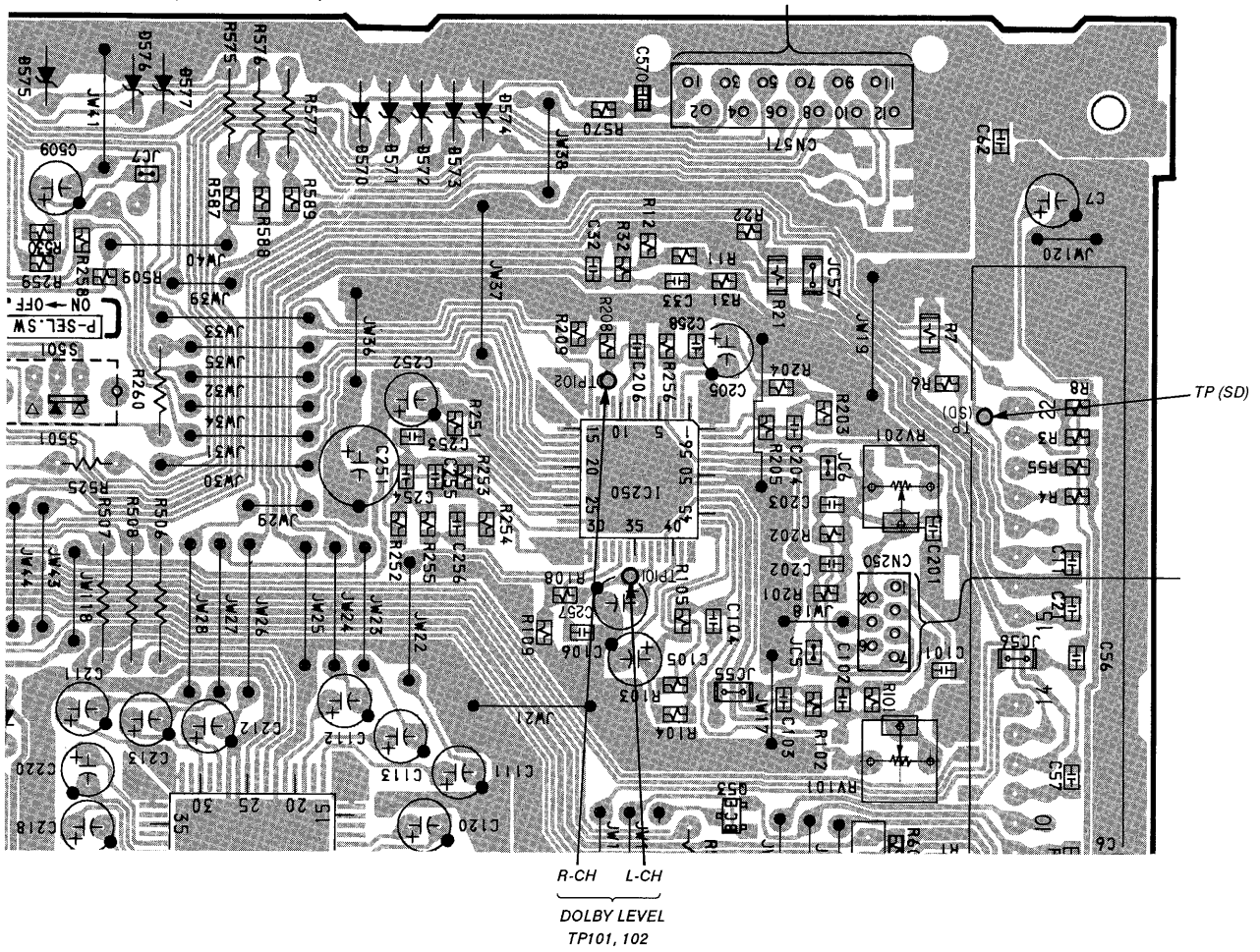
Specification : Separation more than 30dB.

Adjustment Location : Main board (TU1) (See page 19)

【MAIM BOARD】 (Component side)

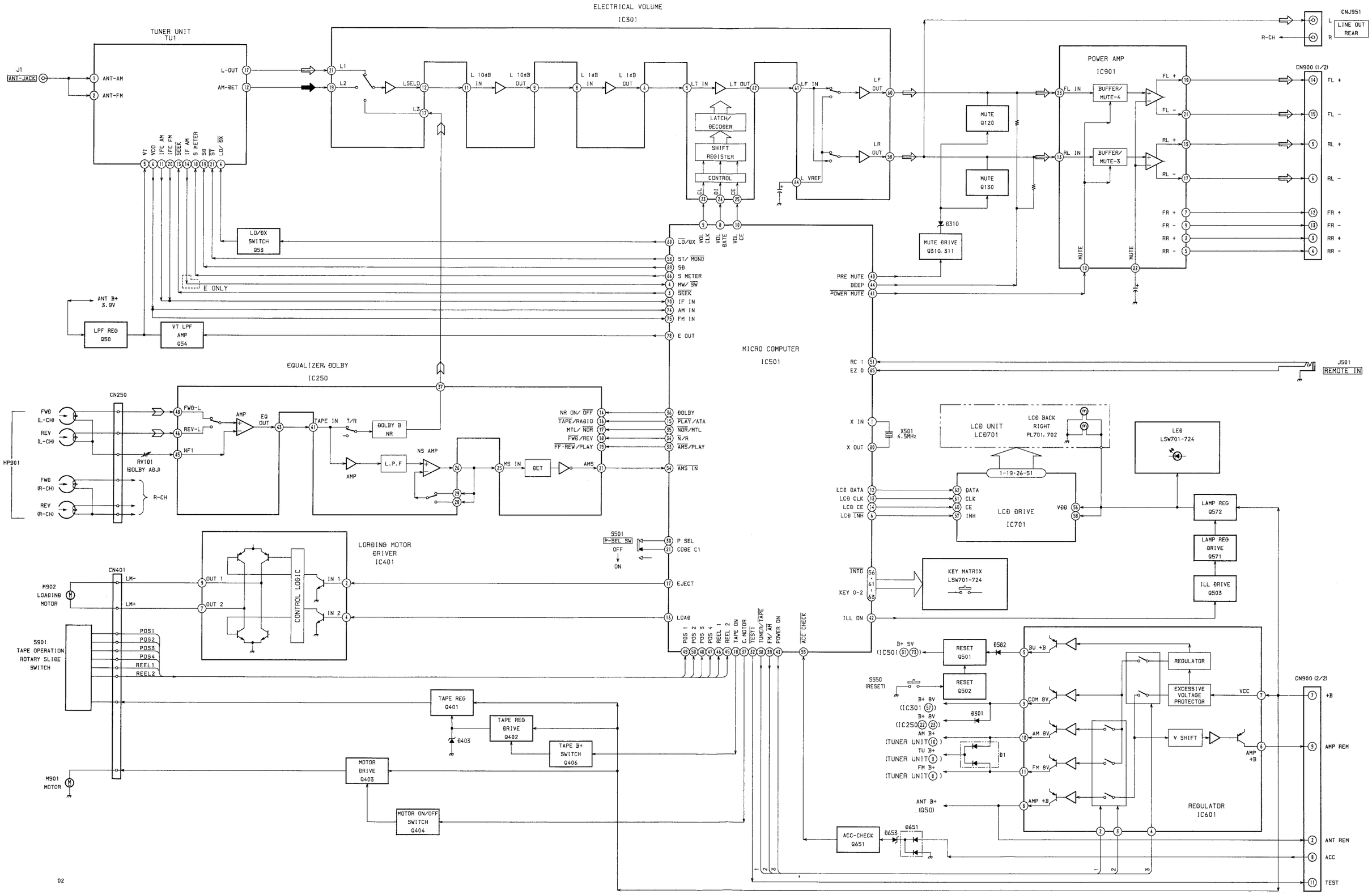

TU1
RV101 (L-CH) : DOLBY Level Adjustment
RV201 (R-CH) : DOLBY Level Adjustment
RV3 : FM AUTO SCAN STOP LEVEL Adjustment
TU1
RV5 : FM NOISE FOCUS Adjustment
RV1 : AM AUTO SCAN STOP LEVEL Adjustment
RV2 : HIGH CUT CONTROL EFFECT Adjustment
RV4 : FM STEREO SEPARATION (30dB) Adjustment

【MAIN BOARD】 (Conductor side)



SECTION 5
DIAGRAMS

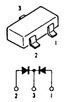
5-1. BLOCK DIAGRAM



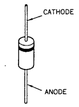
• SEMICONDUCTOR LEAD LAYOUTS

DTC314TKH04
UN2111
UN2211
2SA1037AK-T146-QR
2SC1623-L5L6

DAN202K
MA721WK (TX)

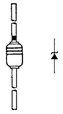


1N5404TU



2SB1115A-YQ

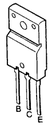
MA4039-M (QZ)
MA4047-M (QZ)
MA4062-M (QZ)
MA4091-H (QZ)
MA4110-L (QZ)



1SS133

2SD1802-FAST-TL

2SD2525



MA8051-H
MA8075-M
MA8240-TX

2SK1657-T1B

Note:

- ○— : parts extracted from the component side.
- ■ : parts mounted on the conductor side.
- ● : Through hole.
- ▒▒ : Pattern from the side which enables seeing. (The other layers' patterns are not indicated)

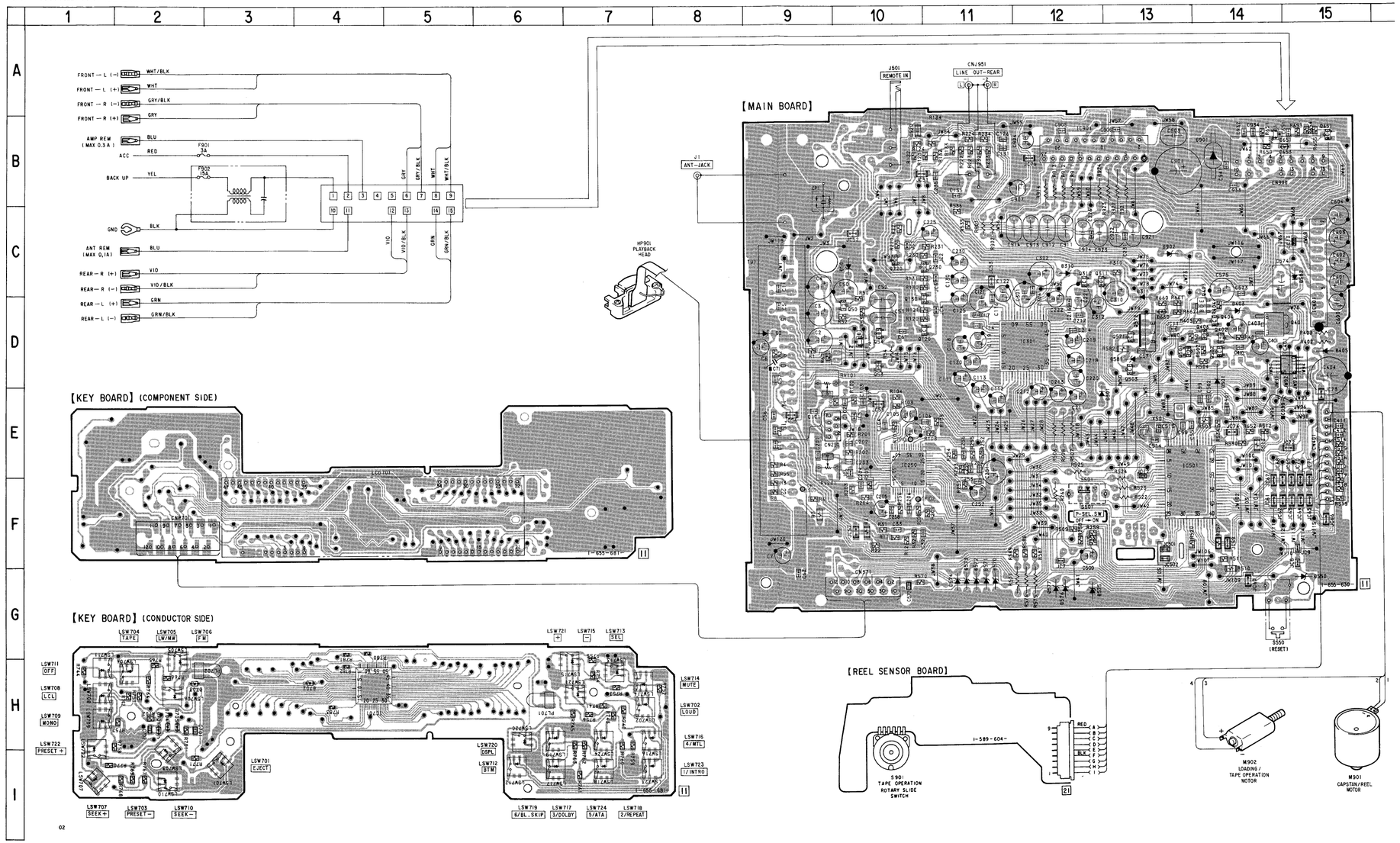
Caution :

Pattern face side : (Conductor Side) Parts on the pattern face side seen from the pattern face are indicated.
Parts face side : (Component side) Parts on the parts face side seen from the parts face are indicated.

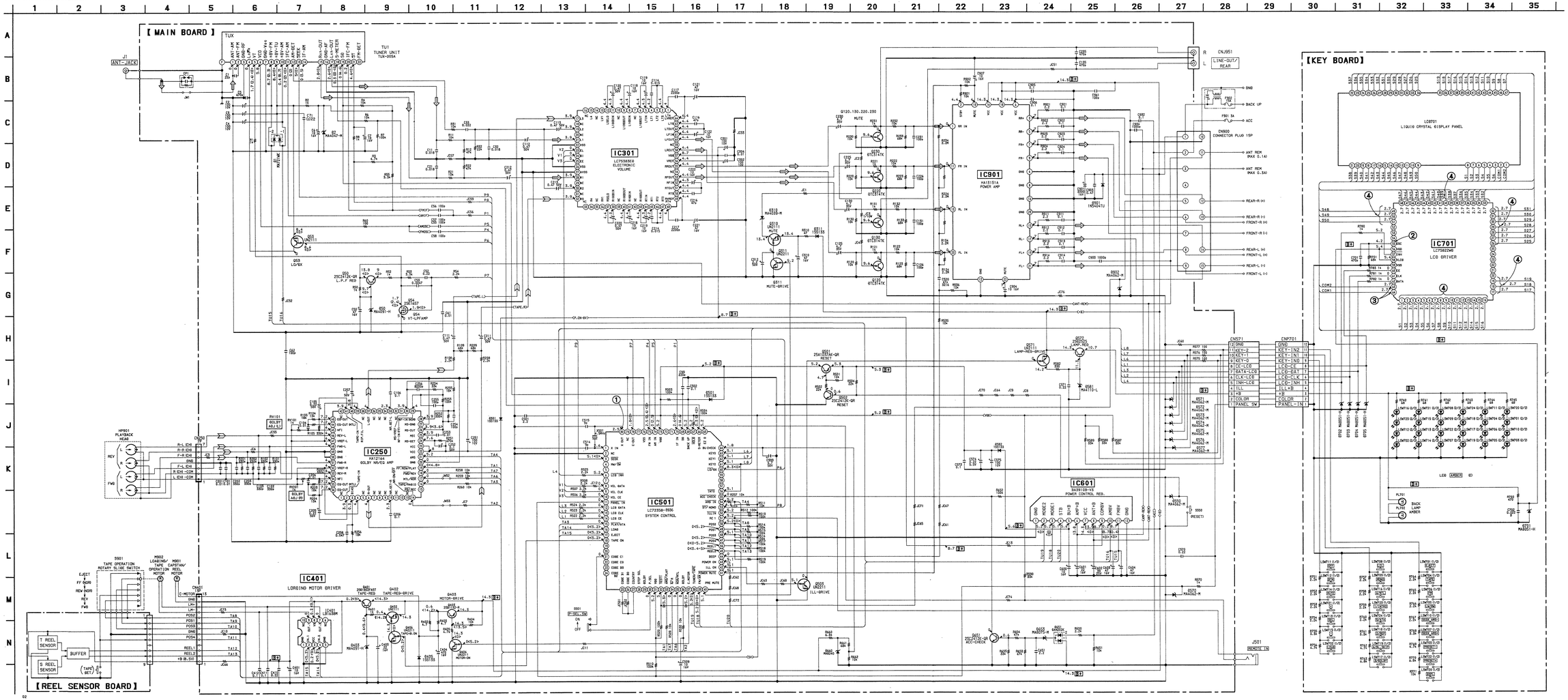
• SEMICONDUCTOR LOCATION

Ref. No.	Location
D1	D - 10
D2	D - 9
D50	C - 10
D301	E - 12
D310	C - 12
D311	C - 13
D403	D - 14
D405	D - 15
D501	D - 14
D550	G - 15
D570	G - 11
D571	G - 11
D572	G - 11
D573	G - 11
D574	G - 11
D575	G - 12
D576	G - 12
D577	G - 12
D581	D - 13
D582	C - 15
D651	B - 14
D653	B - 15
D660	D - 13
D701	H - 2
D702	H - 4
D703	H - 2
D704	H - 2
D705	H - 2
D901	B - 14
D902	C - 13
IC250	E - 10
IC301	D - 12
IC401	D - 15
IC501	E - 13
IC601	C - 15
IC701	H - 4
IC901	B - 12
Q50	D - 10
Q53	D - 10
Q54	D - 10
Q120	D - 10
Q130	D - 10
Q220	C - 10
Q230	C - 11
Q310	C - 12
Q311	C - 12
Q401	D - 14
Q402	D - 14
Q403	D - 14
Q404	D - 14
Q406	D - 14
Q501	D - 13
Q502	D - 14
Q503	D - 13
Q571	D - 13
Q572	D - 13
Q651	B - 15

5-2. PRINTED WIRING BOARDS



5-3. SCHEMATIC DIAGRAM



• WAVEFORMS

① 4.4Vp-p, 2.8mSEC — IC501 ⑯

② 2.6Vp-p, 20.2 μSEC — IC701 ⑮

③ 5.6Vp-p, 9.6mSEC — IC701 ⑭ ⑯

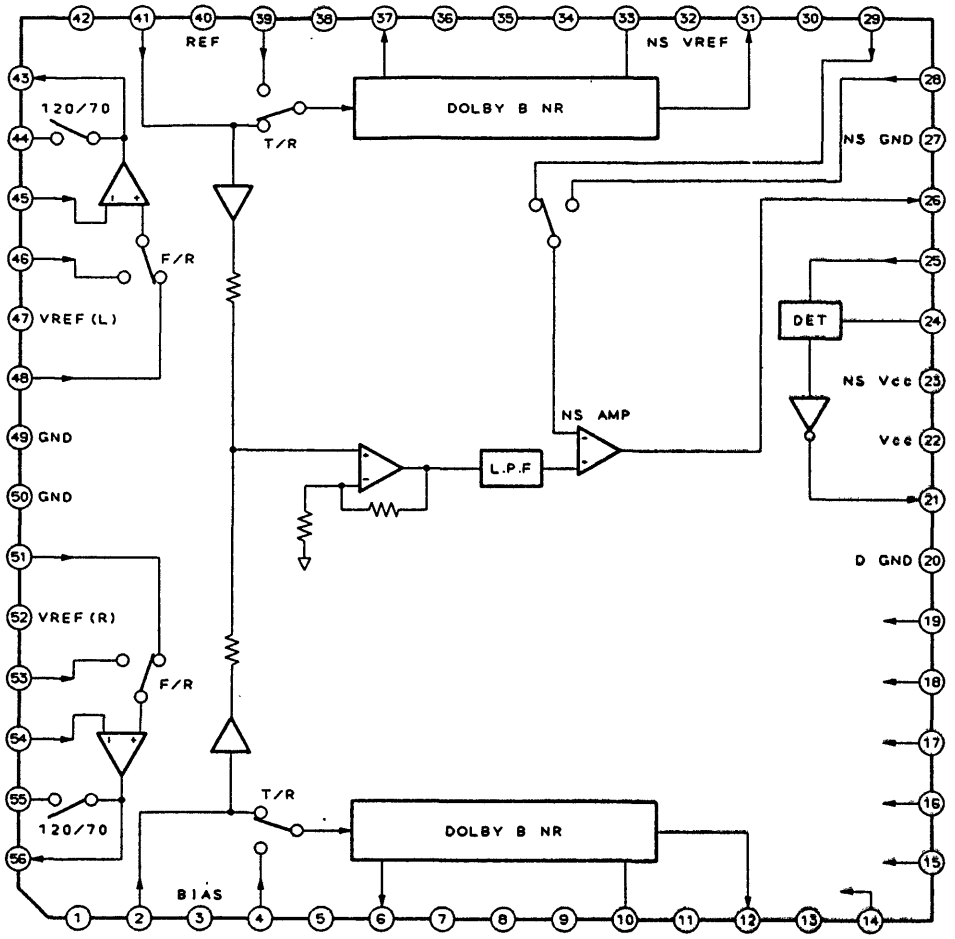
④ 5.6Vp-p, 9.6mSEC — IC701 ①-③ ⑫-⑮

Note :

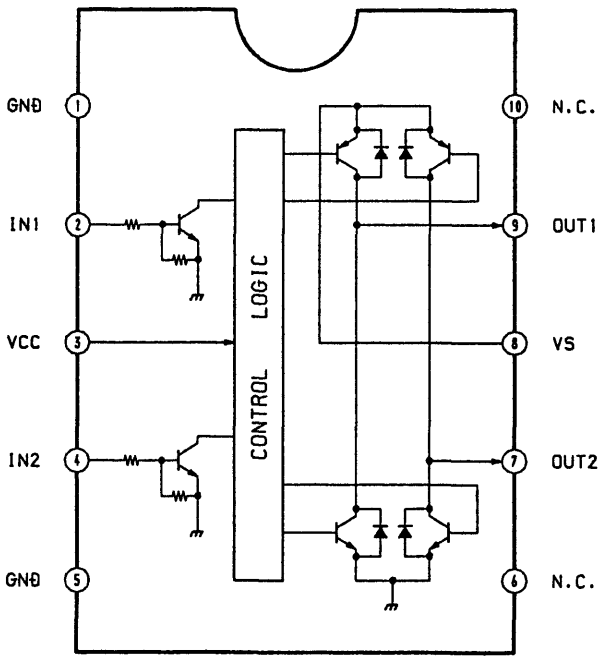
- All capacitors are in μ F unless otherwise noted. pF: μ μ F
  50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and ¼W or less unless otherwise specified.
- B+ : B+ Line
- ⊿ : adjustment for repair.
- Power voltage is dc 14.4V and fed with regulated dc power supply from ACC and BACK-UP terminals.
- Voltage and waveforms are dc with respect to ground under no-signal (detuned) conditions.
  no mark : FM
  ( ) : AM
  《 》: TAPE
- Voltages are taken with a VOM (Input impedance 10M Ω). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.
  ⇨ : FM ⇨ : PB

5-4. IC BLOCK DIAGRAM

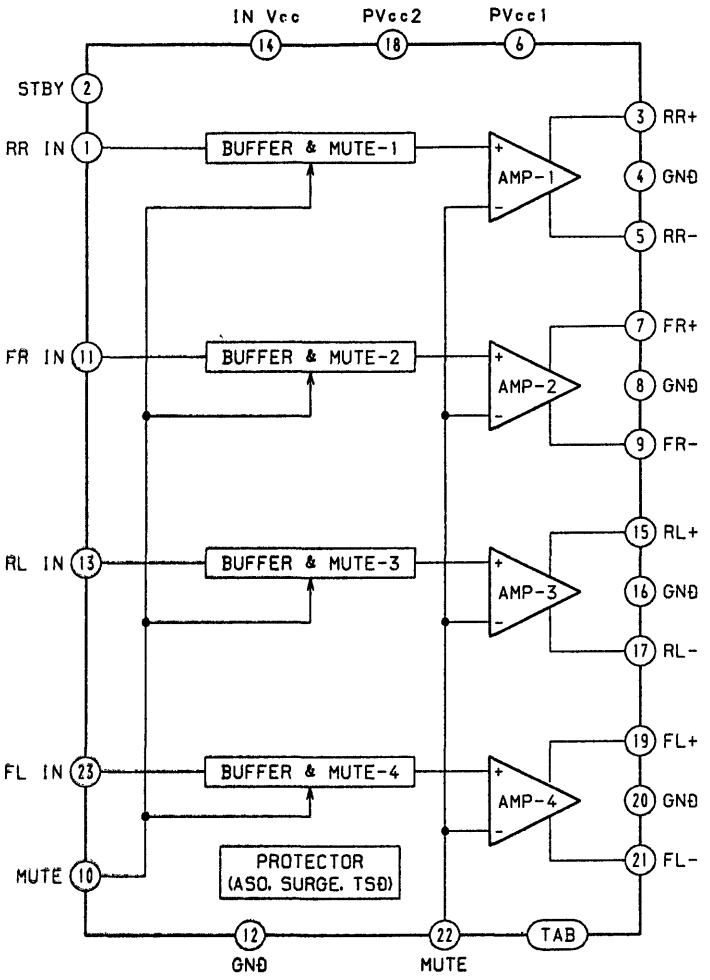
IC250 HA1264



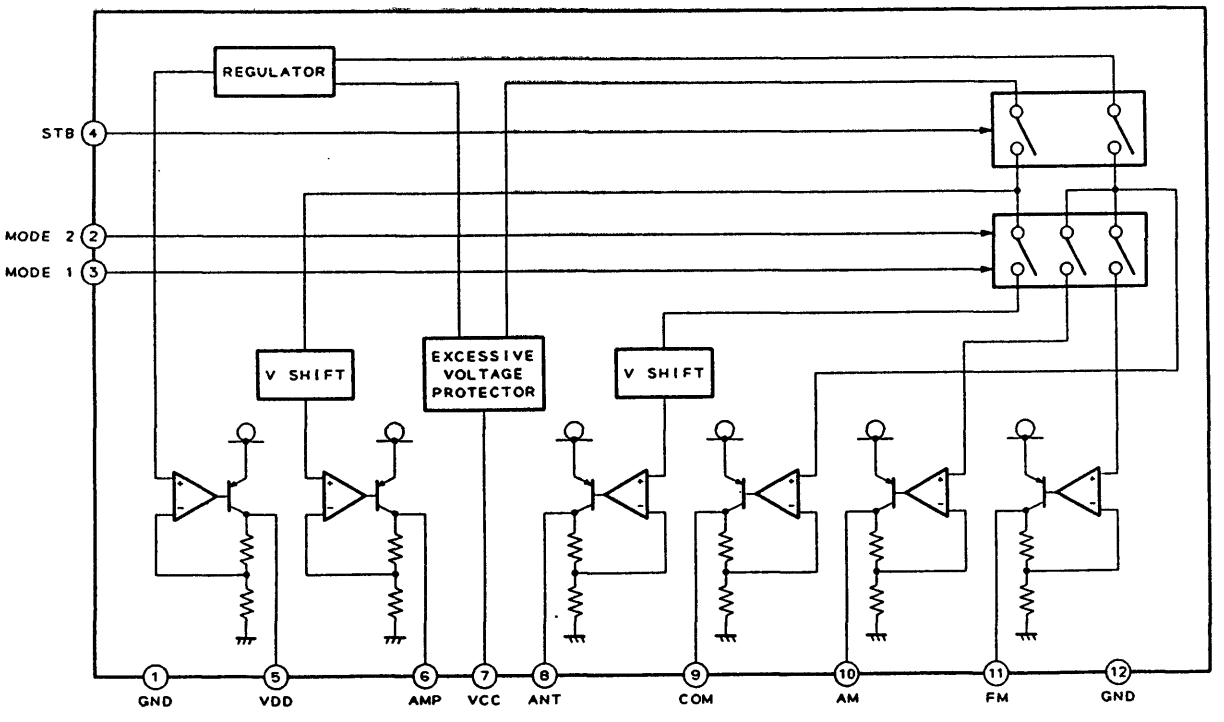
IC401 LB1638M



IC901 HA13151A



IC601 BA3910B-V3

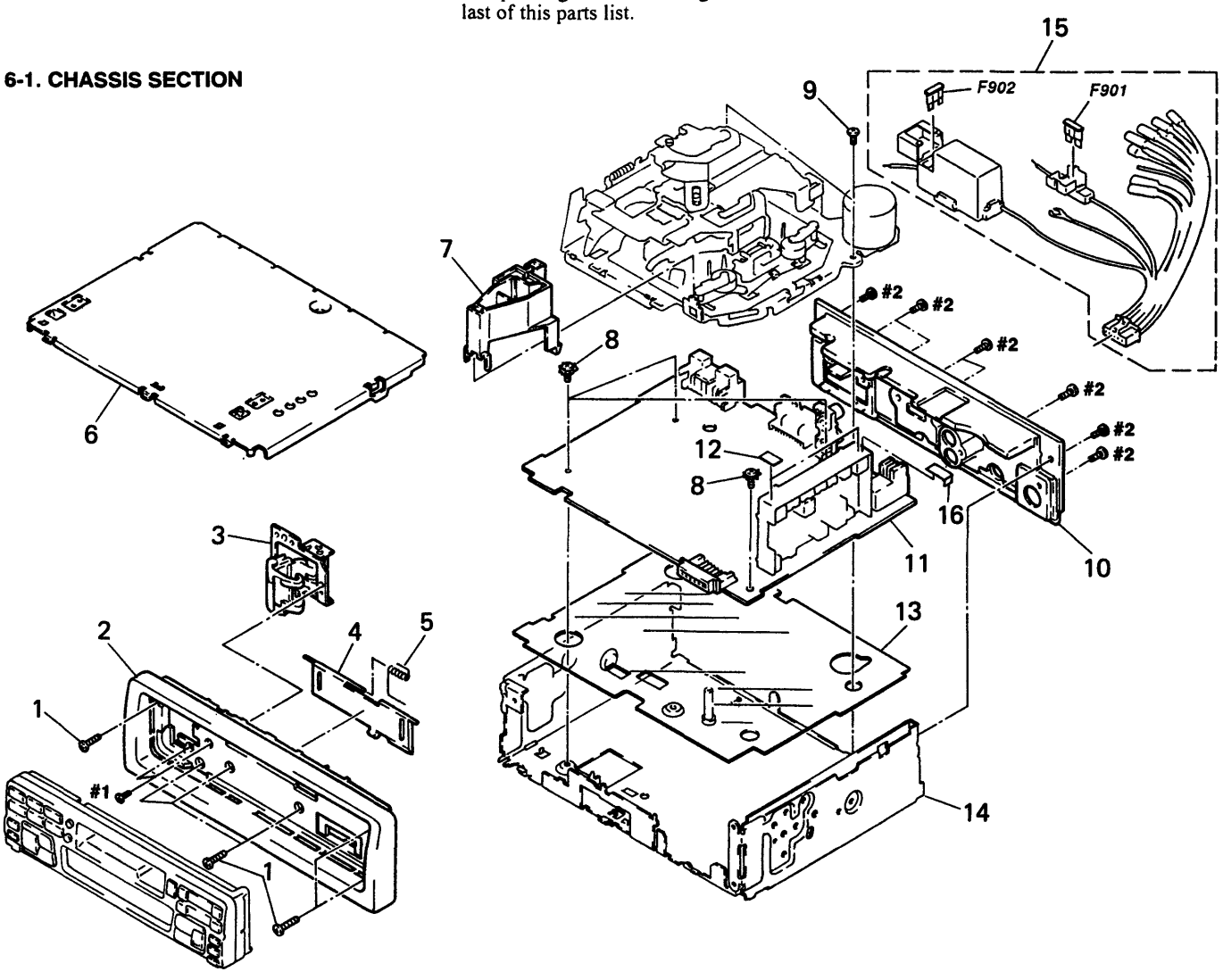


SECTION 6
EXPLODED VIEWS

NOTE :

- -XX, -X mean standardized parts, so they may have some difference from the original one.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked " * "are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list and accessories and packing materials are given in the last of this parts list.

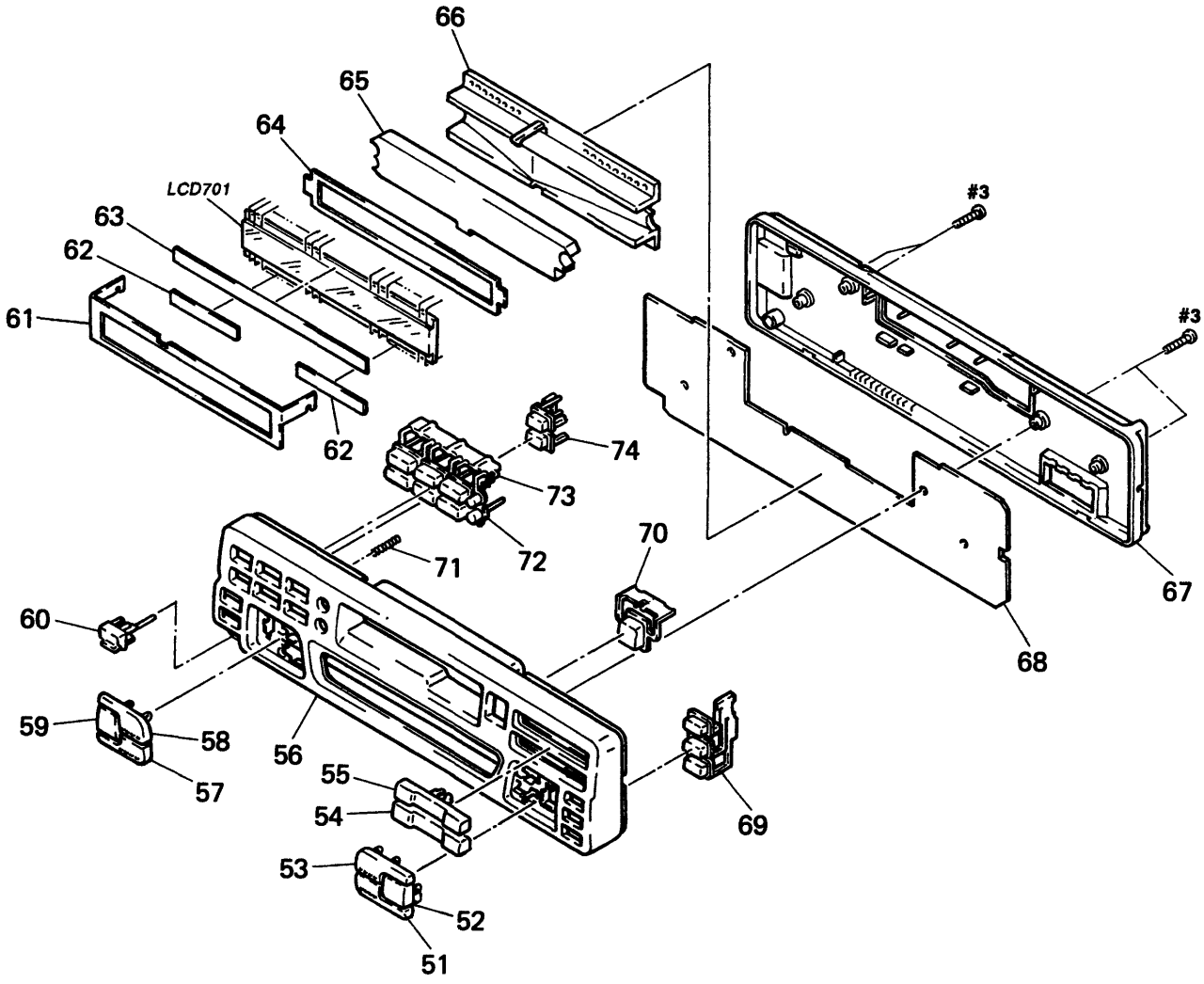
6-1. CHASSIS SECTION



Ref. No.	Part No.	Description	Remark
1	3-907-995-01	SCREW (2.6×8) (BZN), +PTT	
2	3-921-650-01	PANEL, SUB	
3	X-3367-636-1	LOCK ASSY	
4	3-920-839-11	DOOR, CASSETTE	
5	3-913-076-01	SPRING (C DOOR), TORSION	
* 6	X-3369-736-1	COVER ASSY	
7	3-916-872-01	GUIDE	
8	3-915-923-01	SCREW, GROUND POINT	
9	3-919-171-01	SCREW (2.6×6) (C TIGHT)	
* 10	3-921-658-01	HEAT SINK	

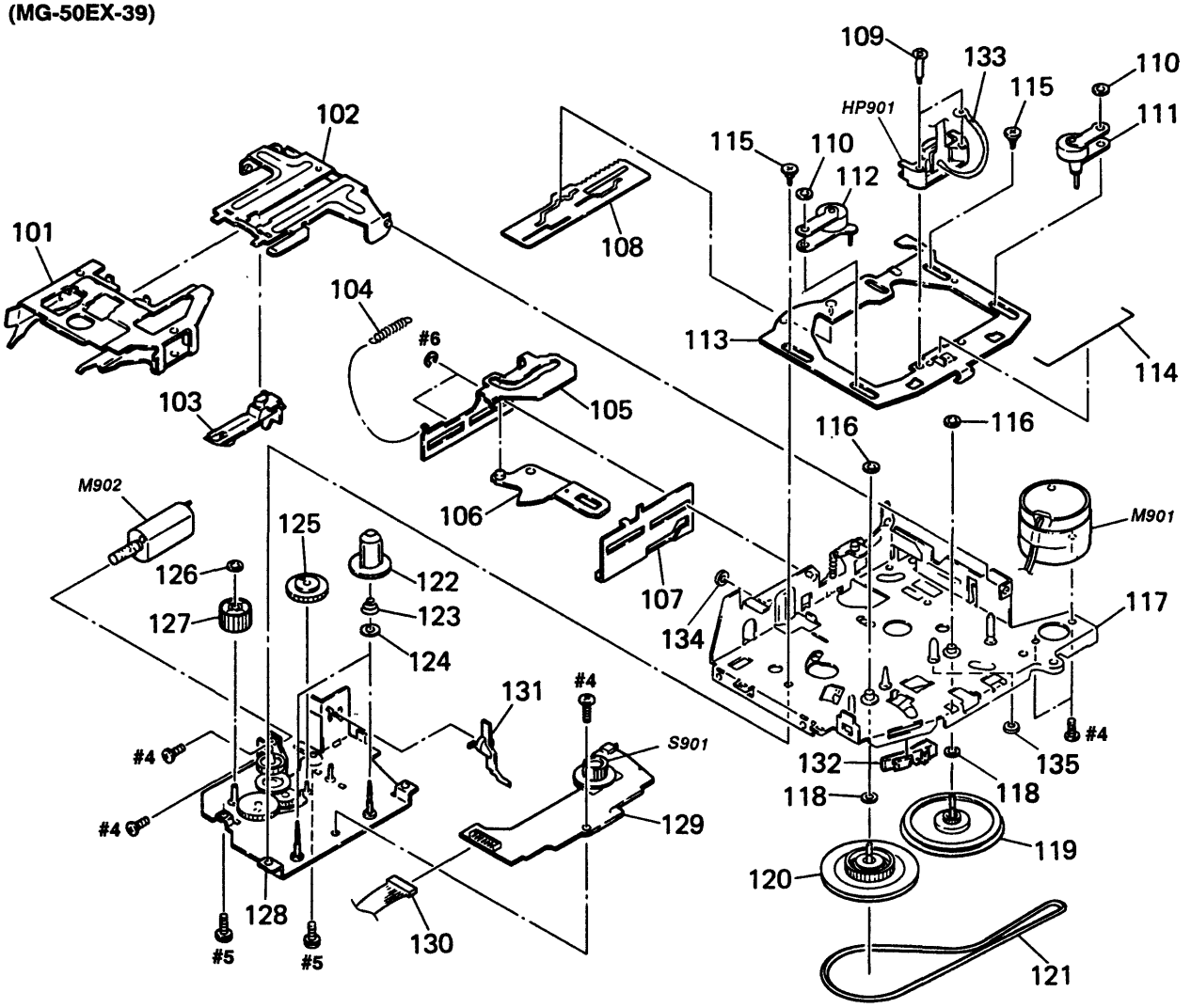
Ref. No.	Part No.	Description	Remark
* 11	A-3298-558-A	MAIN BOARD, COMPLETE	
12	9-911-840-XX	CUSHION (U)	
* 13	3-921-976-01	SHEET, INSULATING	
* 14	X-3369-735-1	CHASSIS ASSY	
15	1-765-082-11	CORD (WITH CONNECTOR) (POWER, SPEAKER) (including F901, 902)	
* 16	3-925-065-00	SHEET (CU)	
F901	1-533-326-11	FUSE (BLADE TYPE) (AUTO FUSE) (3A)	
F902	1-533-331-11	FUSE (BLADE TYPE) (AUTO FUSE) (15A)	

6-2. FRONT PANEL SECTION



Ref. No.	Part No.	Description	Remark
51	3-921-909-11	BUTTON (MW/LW)	
52	3-921-916-11	BUTTON (TAPE)	
53	3-921-915-01	BUTTON (FM)	
54	3-921-652-01	BUTTON (PRESET)	
55	3-921-651-01	BUTTON (SEEK)	
56	3-921-648-01	PANEL, FRONT	
57	3-921-911-01	BUTTON (-)	
58	3-921-910-01	BUTTON (+)	
59	3-921-902-01	BUTTON (SEL)	
60	3-921-900-01	BUTTON (RELEASE)	
* 61	3-921-659-01	PLATE (LCD), GROUND	
* 62	3-921-727-01	SHEET (LCD) (S)	
* 63	3-921-726-01	SHEET (LCD) (L)	
* 64	3-921-660-01	SHEET (REFLECTOR)	
* 65	3-921-656-01	PLATE, LIGHT GUIDE	
* 66	3-921-657-01	HOLDER (LCD)	
67	3-921-649-01	PANEL, FRONT BACK	
* 68	A-3298-560-A	KEY BOARD, COMPLETE	
69	3-921-898-11	BUTTON (3 GANG)	
70	3-921-653-01	BUTTON (EJECT)	
71	3-914-590-01	SPRING (R2)	
72	3-921-655-01	BUTTON (4-6)	
73	3-921-654-01	BUTTON (1-3)	
74	3-921-903-01	BUTTON (2 GANG)	
LCD701	1-810-800-11	DISPLAY PANEL, LIQUID CRYSTAL	

6-3. MECHANISM DECK SECTION
(MG-50EX-39)



Ref. No.	Part No.	Description	Remark
101	3-912-881-01	HOUSING, CASSETTE	
* 102	3-912-882-01	HANGER, HOUSING	
103	3-912-884-01	CATCHER	
104	3-912-885-01	SPRING (LOADING LEVER), TENSION	
* 105	3-912-892-01	LEVER (B), LOADING	
* 106	3-912-883-01	ARM, SUCTION	
* 107	3-922-941-01	LEVER (A2), LOADING	
* 108	3-912-876-01	LEVER, MODE	
109	3-912-893-01	SCREW, HEAD FITTING	
110	3-579-788-01	WASHER, STOPPER	
111	X-3368-266-1	PINCH LEVER (F) ASSY	
112	X-3368-267-1	PINCH LEVER (R) ASSY	
* 113	X-3368-268-1	BASE ASSY, HEAD	
114	3-912-879-01	SPRING, PINCH PRESS	
115	3-912-897-01	SCREW (HB), STEP	
116	3-364-151-01	WASHER	
117	X-3368-841-3	CHASSIS (SV) ASSY (A), MECHANICAL	
118	3-701-437-21	WASHER	
119	3-913-825-01	FLYWHEEL (FZ)	
120	X-3369-124-1	CLUTCH (S) ASSY, FR	

Ref. No.	Part No.	Description	Remark
121	3-912-896-01	BELT	
122	X-3368-843-1	GEAR ASSY, REEL	
123	3-917-222-01	SPRING (B-T), COIL	
124	3-917-324-01	WASHER (B-T)	
125	3-912-888-01	GEAR (LOADING E)	
126	3-321-813-01	WASHER, COTTER POLYETHYLENE	
127	3-912-889-01	GEAR (LOADING F)	
128	X-3368-842-2	BRACKET ASSY, REEL	
129	1-589-604-11	REEL SENSOR BOARD	
130	1-765-460-12	CORD (WITH CONNECTOR)	
131	3-916-358-01	LEVER (TAPE IN 2)	
132	3-919-553-01	GUIDE (BELT)	
* 133	3-917-258-01	PLATE, GROUND	
134	3-344-223-01	WASHER	
135	3-315-384-11	WASHER, STOPPER	
HP901	1-500-196-11	HEAD, MAGNETIC (PLAYBACK)	
M901	X-3368-684-1	MOTOR ASSY, MAIN	
M902	X-3368-685-1	MOTOR ASSY, SUB	
S901	1-692-885-11	SWITCH, ROTARY SLIDE	

SECTION 7
ELECTRICAL PARTS LIST

KEY

NOTE :
- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms
  METAL : Metal-film resistor
  METAL OXIDE : Metal oxide-film resistor
  F : nonflammable
- Items marked " * "are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u : μ , for example :
  uA.... : μA.... , uPA.... : μPA....
  uPB.... : μPB.... , uPC.... : μPC....
  uPD.... : μPD....
- CAPACITORS
  uF : μF
- COILS
  uH : μH

When indicating parts by reference number, please include the board.

Ref.No.	Part No.	Description			Remark
*	A-3298-560-A	KEY BOARD, COMPLETE			
		**********			
		< CAPACITOR >			
C701	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C702	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
		< CONNECTOR >			
CNP701	1-764-423-11	PIN, CONNECTOR 12P			
		< DIODE >			
D701	8-719-422-43	DIODE	MA8051-H		
D702	8-719-422-43	DIODE	MA8051-H		
D703	8-719-422-43	DIODE	MA8051-H		
D704	8-719-422-43	DIODE	MA8051-H		
D705	8-719-422-43	DIODE	MA8051-H		
		< IC >			
IC701	8-759-330-60	IC	LC75822WD		
		< LIQUID CRYSTAL DISPLAY >			
LCD701	1-810-800-11	DISPLAY PANEL, LIQUID CRYSTAL			
		< SWITCH >			
LSW701	1-762-141-11	SWITCH, KEY BOARD (WITH LED)			(EJECT)
LSW702	1-762-141-11	SWITCH, KEY BOARD (WITH LED)			(LOUD)
LSW703	1-762-141-11	SWITCH, KEY BOARD (WITH LED)			(PRESET-)
LSW704	1-762-141-11	SWITCH, KEY BOARD (WITH LED)			(TAPE)
LSW705	1-762-141-11	SWITCH, KEY BOARD (WITH LED)			(LW/MW)
LSW706	1-762-141-11	SWITCH, KEY BOARD (WITH LED)			(FM)
LSW707	1-762-141-11	SWITCH, KEY BOARD (WITH LED)			(SEEK AMS+)
LSW708	1-762-141-11	SWITCH, KEY BOARD (WITH LED)			(LCL)
LSW709	1-762-141-11	SWITCH, KEY BOARD (WITH LED)			(MONO)
LSW710	1-762-141-11	SWITCH, KEY BOARD (WITH LED)			(SEEK AMS-)
LSW711	1-762-141-11	SWITCH, KEY BOARD (WITH LED)			(OFF)
LSW712	1-762-141-11	SWITCH, KEY BOARD (WITH LED)			(BTM)
LSW713	1-762-141-11	SWITCH, KEY BOARD (WITH LED)			(SEL)
LSW714	1-762-141-11	SWITCH, KEY BOARD (WITH LED)			(MUTE)
LSW715	1-762-141-11	SWITCH, KEY BOARD (WITH LED)			(-)
LSW716	1-762-141-11	SWITCH, KEY BOARD (WITH LED)			(4/MTL)
LSW717	1-762-141-11	SWITCH, KEY BOARD (WITH LED)			(3/□)
LSW718	1-762-141-11	SWITCH, KEY BOARD (WITH LED)			(2/REP)
LSW719	1-762-141-11	SWITCH, KEY BOARD (WITH LED)			(6/BL.SKIP)
LSW720	1-762-141-11	SWITCH, KEY BOARD (WITH LED)			(DSPL)
LSW721	1-762-141-11	SWITCH, KEY BOARD (WITH LED)			(+)
LSW722	1-762-141-11	SWITCH, KEY BOARD (WITH LED)			(PRESET +)
LSW723	1-762-141-11	SWITCH, KEY BOARD (WITH LED)			(1/INTORO)
LSW724	1-762-141-11	SWITCH, KEY BOARD (WITH LED)			(5-ATA)
		< PILOT LAMP >			
PL701	1-517-165-21	LAMP, PILOT (BACK LAMP)			
PL702	1-517-165-21	LAMP, PILOT (BACK LAMP)			
		< RESISTOR >			
R701	1-216-093-00	METAL CHIP	68K	5%	1/10W
R702	1-216-041-00	METAL CHIP	470	5%	1/10W
R740	1-216-021-00	METAL CHIP	68	5%	1/10W
R741	1-216-021-00	METAL CHIP	68	5%	1/10W
R742	1-216-021-00	METAL CHIP	68	5%	1/10W
R743	1-216-021-00	METAL CHIP	68	5%	1/10W
R744	1-216-021-00	METAL CHIP	68	5%	1/10W
R745	1-216-021-00	METAL CHIP	68	5%	1/10W
R751	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R752	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R753	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R754	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R755	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R756	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R757	1-216-057-00	METAL CHIP	2.2K	5%	1/10W

KEY MAIN

Ref.No.	Part No.	Description			Remark
R758	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R759	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R760	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R761	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R762	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R763	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R764	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R765	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R766	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R767	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R768	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R769	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R770	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R771	1-216-073-00	METAL CHIP	10K	5%	1/10W
R780	1-216-821-11	METAL CHIP	1K	5%	1/16W
R781	1-216-821-11	METAL CHIP	1K	5%	1/16W
R782	1-216-821-11	METAL CHIP	1K	5%	1/16W
R783	1-216-821-11	METAL CHIP	1K	5%	1/16W

****

* A-3298-558-A MAIN BOARD, COMPLETE

****

< CAPACITOR >

C1	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C2	1-124-584-00	ELECT	100uF	20%	10V
C3	1-124-584-00	ELECT	100uF	20%	10V
C4	1-124-584-00	ELECT	100uF	20%	10V
C5	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C6	1-126-157-11	ELECT	10uF	20%	16V
C7	1-126-157-11	ELECT	10uF	20%	16V
C11	1-163-024-00	CERAMIC CHIP	0.018uF	10%	50V
C21	1-163-024-00	CERAMIC CHIP	0.018uF	10%	50V
C32	1-163-024-00	CERAMIC CHIP	0.018uF	10%	50V
C33	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C50	1-124-589-11	ELECT	47uF	20%	16V
C52	1-136-169-00	FILM	0.22uF	5%	50V
C53	1-104-683-11	MYLAR	0.0047uF	5%	50V
C55	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C56	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C57	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C58	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C61	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C62	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C71	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C99	1-163-001-11	CERAMIC CHIP	220PF	10%	50V
C101	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C102	1-163-129-00	CERAMIC CHIP	330PF	5%	50V
C103	1-163-129-00	CERAMIC CHIP	330PF	5%	50V
C104	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C105	1-124-464-11	ELECT	0.22uF	20%	50V
C106	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C111	1-126-159-11	ELECT	0.47uF	20%	50V
C112	1-126-159-11	ELECT	0.47uF	20%	50V
C113	1-126-159-11	ELECT	0.47uF	20%	50V
C114	1-163-023-00	CERAMIC CHIP	0.015uF	5%	50V
C116	1-163-243-11	CERAMIC CHIP	47PF	5%	50V
C117	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
C118	1-126-157-11	ELECT	10uF	20%	16V
C119	1-126-157-11	ELECT	10uF	20%	16V
C120	1-126-159-11	ELECT	0.47uF	20%	50V
C121	1-124-589-11	ELECT	47uF	20%	16V
C122	1-126-157-11	ELECT	10uF	20%	16V
C125	1-126-163-11	ELECT	4.7uF	20%	50V
C126	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C130	1-126-163-11	ELECT	4.7uF	20%	50V
C131	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C135	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C201	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C202	1-163-129-00	CERAMIC CHIP	330PF	5%	50V
C203	1-163-129-00	CERAMIC CHIP	330PF	5%	50V
C204	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C205	1-124-464-11	ELECT	0.22uF	20%	50V
C206	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C211	1-126-159-11	ELECT	0.47uF	20%	50V
C212	1-126-159-11	ELECT	0.47uF	20%	50V
C213	1-126-159-11	ELECT	0.47uF	20%	50V
C214	1-163-023-00	CERAMIC CHIP	0.015uF	5%	50V
C216	1-163-243-11	CERAMIC CHIP	47PF	5%	50V
C217	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
C218	1-126-157-11	ELECT	10uF	20%	16V
C219	1-126-157-11	ELECT	10uF	20%	16V
C220	1-126-159-11	ELECT	0.47uF	20%	50V
C221	1-124-589-11	ELECT	47uF	20%	16V
C222	1-126-157-11	ELECT	10uF	20%	16V
C225	1-126-163-11	ELECT	4.7uF	20%	50V
C226	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C230	1-126-163-11	ELECT	4.7uF	20%	50V
C231	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C235	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C251	1-124-584-00	ELECT	100uF	20%	10V
C252	1-124-463-00	ELECT	0.1uF	20%	50V
C253	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C254	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C255	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C256	1-163-020-00	CERAMIC CHIP	0.0082uF	10%	50V
C257	1-126-301-11	ELECT	1uF	20%	50V
C258	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V

MAIN

Ref.No.	Part No.	Description			Remark
C301	1-124-584-00	ELECT	100uF	20%	10V
C302	1-124-584-00	ELECT	100uF	20%	10V
C304	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C310	1-124-589-11	ELECT	47uF	20%	16V
C312	1-124-257-00	ELECT	2.2uF	20%	50V
C401	1-126-157-11	ELECT	10uF	20%	16V
C403	1-124-234-00	ELECT	22uF	20%	16V
C404	1-126-103-11	ELECT	470uF	20%	16V
C410	1-164-222-11	CERAMIC CHIP	0.22uF		25V
C411	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C412	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C501	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C502	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C509	1-126-157-11	ELECT	10uF	20%	16V
C514	1-163-092-00	CERAMIC CHIP	9PF	0.25PF	50V
C515	1-163-092-00	CERAMIC CHIP	9PF	0.25PF	50V
C520	1-163-173-00	CERAMIC CHIP	47PF	5%	50V
C570	1-164-222-11	CERAMIC CHIP	0.22uF		25V
C571	1-164-222-11	CERAMIC CHIP	0.22uF		25V
C573	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C574	1-125-705-11	CAP, DOUBLE LAYERS		0.22F	
C575	1-124-584-00	ELECT	100uF	20%	10V
C600	1-126-157-11	ELECT	10uF	20%	16V
C601	1-124-234-00	ELECT	22uF	20%	16V
C602	1-128-195-11	ELECT	39uF	20%	25V
C603	1-126-967-11	ELECT	47uF	20%	16V
C604	1-126-967-11	ELECT	47uF	20%	16V
C651	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C901	1-126-936-11	ELECT	3300uF	20%	16V
C903	1-136-173-00	FILM	0.47uF	5%	50V
C904	1-126-157-11	ELECT	10uF	20%	16V
C905	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C906	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C907	1-126-157-11	ELECT	10uF	20%	16V
C911	1-136-165-00	FILM	0.1uF	5%	50V
C912	1-136-165-00	FILM	0.1uF	5%	50V
C913	1-136-165-00	FILM	0.1uF	5%	50V
C914	1-136-165-00	FILM	0.1uF	5%	50V
C921	1-136-165-00	FILM	0.1uF	5%	50V
C922	1-136-165-00	FILM	0.1uF	5%	50V
C923	1-136-165-00	FILM	0.1uF	5%	50V
C924	1-136-165-00	FILM	0.1uF	5%	50V
C932	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C933	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C934	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C941	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C999	1-126-163-11	ELECT	4.7uF	20%	50V

Ref.No.	Part No.	Description	Remark
		< CONNECTOR >	
CN250	1-766-260-11	CONNECTOR, FFC/FPC (ZIF) 7P	
* CN401	1-506-995-11	PIN, CONNECTOR (PC BOARD) 13P	
CN571	1-764-422-11	PLUG, CONNECTOR 12P	
CN900	1-764-426-11	PLUG, CONNECTOR 15P	
		< JACK >	
CNJ951	1-764-424-41	JACK, PIN 2P (LINE-OUT/REAR)	
		< COMPOSITION CIRCUIT BLOCK >	
CP1	1-519-504-11	GAP, DISCHARGE	
		< DIODE >	
D1	8-719-040-04	DIODE MA721WK-(TX)	
D2	8-719-034-30	DIODE MA4047-M(QZ)	
D50	8-719-034-63	DIODE MA4091-H(QZ)	
D301	8-719-901-33	DIODE 1SS133	
D310	8-719-034-22	DIODE MA4039-M(QZ)	
D311	8-719-901-33	DIODE 1SS133	
D403	8-719-034-63	DIODE MA4091-H(QZ)	
D405	8-719-901-33	DIODE 1SS133	
D501	8-719-901-33	DIODE 1SS133	
D550	8-719-034-46	DIODE MA4062-M(QZ)	
D570	8-719-034-46	DIODE MA4062-M(QZ)	
D571	8-719-034-46	DIODE MA4062-M(QZ)	
D572	8-719-034-46	DIODE MA4062-M(QZ)	
D573	8-719-034-46	DIODE MA4062-M(QZ)	
D574	8-719-034-46	DIODE MA4062-M(QZ)	
D575	8-719-034-46	DIODE MA4062-M(QZ)	
D576	8-719-034-46	DIODE MA4062-M(QZ)	
D577	8-719-034-46	DIODE MA4062-M(QZ)	
D581	8-719-034-69	DIODE MA4110-L(QZ)	
D582	8-719-901-33	DIODE 1SS133	
D651	8-719-914-43	DIODE DAN202K	
D653	8-719-422-76	DIODE MA8075-M	
D660	8-719-018-04	DIODE MA8240-TX	
D901	8-719-049-38	DIODE 1N5404TU	
D902	8-719-034-46	DIODE MA4062-M(QZ)	
		< IC >	
IC250	8-759-161-01	IC HA12164	
IC301	8-759-330-62	IC LC75383ED	
IC401	8-759-823-87	IC LB1638M	
IC501	8-759-342-85	IC LC72358-8936	
IC601	8-759-182-76	IC BA3910B-V3	
IC901	8-759-279-87	IC HA13151A	

MAIN

Ref. No.	Part No.	Description			Remark
		< JACK >			
J1	1-764-808-11	JACK (ANT)			
J501	1-566-822-11	JACK (NEW ROTARY COMMANDER)			
		< JUMPER RESISTOR >			
JC1	1-216-295-00	METAL CHIP	0	5%	1/10W
JC2	1-216-295-00	METAL CHIP	0	5%	1/10W
JC3	1-216-295-00	METAL CHIP	0	5%	1/10W
JC4	1-216-295-00	METAL CHIP	0	5%	1/10W
JC5	1-216-295-00	METAL CHIP	0	5%	1/10W
JC6	1-216-295-00	METAL CHIP	0	5%	1/10W
JC7	1-216-295-00	METAL CHIP	0	5%	1/10W
JC8	1-216-295-00	METAL CHIP	0	5%	1/10W
JC9	1-216-295-00	METAL CHIP	0	5%	1/10W
JC10	1-216-295-00	METAL CHIP	0	5%	1/10W
JC11	1-216-295-00	METAL CHIP	0	5%	1/10W
JC12	1-216-295-00	METAL CHIP	0	5%	1/10W
JC13	1-216-295-00	METAL CHIP	0	5%	1/10W
JC51	1-216-296-00	METAL CHIP	0	5%	1/8W
JC52	1-216-296-00	METAL CHIP	0	5%	1/8W
JC53	1-216-296-00	METAL CHIP	0	5%	1/8W
JC55	1-216-296-00	METAL CHIP	0	5%	1/8W
JC56	1-216-296-00	METAL CHIP	0	5%	1/8W
JC57	1-216-296-00	METAL CHIP	0	5%	1/8W
JC59	1-216-296-00	METAL CHIP	0	5%	1/8W
JC60	1-216-296-00	METAL CHIP	0	5%	1/8W
JC61	1-216-296-00	METAL CHIP	0	5%	1/8W
JC62	1-216-296-00	METAL CHIP	0	5%	1/8W
JC63	1-216-296-00	METAL CHIP	0	5%	1/8W
JC64	1-216-296-00	METAL CHIP	0	5%	1/8W
JC65	1-216-296-00	METAL CHIP	0	5%	1/8W
JC66	1-216-296-00	METAL CHIP	0	5%	1/8W
JC67	1-216-296-00	METAL CHIP	0	5%	1/8W
JC68	1-216-296-00	METAL CHIP	0	5%	1/8W
JC69	1-216-296-00	METAL CHIP	0	5%	1/8W
JC70	1-216-296-00	METAL CHIP	0	5%	1/8W
JC71	1-216-296-00	METAL CHIP	0	5%	1/8W
JC72	1-216-296-00	METAL CHIP	0	5%	1/8W
JC73	1-216-296-00	METAL CHIP	0	5%	1/8W
JC74	1-216-296-00	METAL CHIP	0	5%	1/8W
JC76	1-216-296-00	METAL CHIP	0	5%	1/8W
JC501	1-216-295-00	METAL CHIP	0	5%	1/10W
JC502	1-216-295-00	METAL CHIP	0	5%	1/10W
		< TRANSISTOR >			
Q50	8-729-120-28	TRANSISTOR	2SC1623-L5L6		
Q53	8-729-424-08	TRANSISTOR	UN2111		
Q54	8-729-021-94	TRANSISTOR	2SK1657-T1B		

Ref. No.	Part No.	Description		Remark
Q120	8-729-920-21	TRANSISTOR	DTC314TKH04	
Q130	8-729-920-21	TRANSISTOR	DTC314TKH04	
Q220	8-729-920-21	TRANSISTOR	DTC314TKH04	
Q230	8-729-920-21	TRANSISTOR	DTC314TKH04	
Q310	8-729-424-08	TRANSISTOR	UN2111	
Q311	8-729-421-22	TRANSISTOR	UN2211	
Q401	8-729-015-11	TRANSISTOR	2SD1802-FAST-TL	
Q402	8-729-424-08	TRANSISTOR	UN2111	
Q403	8-729-106-60	TRANSISTOR	2SB1115A-YQ	
Q404	8-729-421-22	TRANSISTOR	UN2211	
Q406	8-729-421-22	TRANSISTOR	UN2211	
Q501	8-729-026-50	TRANSISTOR	2SA1037AK-T146-QR	
Q502	8-729-120-28	TRANSISTOR	2SC1623-L5L6	
Q503	8-729-421-22	TRANSISTOR	UN2211	
Q571	8-729-424-08	TRANSISTOR	UN2111	
Q572	8-729-030-18	TRANSISTOR	2SD2525	
Q651	8-729-120-28	TRANSISTOR	2SC1623-L5L6	
		< RESISTOR >		
R1	1-216-049-11	METAL GLAZE	1K 5%	1/10W
R2	1-216-049-11	METAL GLAZE	1K 5%	1/10W
R3	1-216-061-00	METAL CHIP	3.3K 5%	1/10W
R4	1-216-073-00	METAL CHIP	10K 5%	1/10W
R6	1-216-073-00	METAL CHIP	10K 5%	1/10W
R7	1-216-246-00	METAL GLAZE	100K 5%	1/8W
R8	1-216-049-11	METAL GLAZE	1K 5%	1/10W
R11	1-216-073-00	METAL CHIP	10K 5%	1/10W
R12	1-216-089-00	METAL CHIP	47K 5%	1/10W
R21	1-216-222-00	METAL GLAZE	10K 5%	1/8W
R22	1-216-089-00	METAL CHIP	47K 5%	1/10W
R31	1-216-073-00	METAL CHIP	10K 5%	1/10W
R32	1-216-081-00	METAL CHIP	22K 5%	1/10W
R50	1-216-049-11	METAL GLAZE	1K 5%	1/10W
R52	1-216-049-11	METAL GLAZE	1K 5%	1/10W
R53	1-216-061-00	METAL CHIP	3.3K 5%	1/10W
R54	1-249-421-11	CARBON	2.2K 5%	1/4W
R55	1-216-061-00	METAL CHIP	3.3K 5%	1/10W
R60	1-216-025-00	METAL GLAZE	100 5%	1/10W
R101	1-216-109-00	METAL CHIP	330K 5%	1/10W
R102	1-216-109-00	METAL CHIP	330K 5%	1/10W
R103	1-216-079-00	METAL CHIP	18K 5%	1/10W
R104	1-216-076-00	METAL CHIP	13K 5%	1/10W
R105	1-216-109-00	METAL CHIP	330K 5%	1/10W
R108	1-216-057-00	METAL CHIP	2.2K 5%	1/10W
R109	1-216-093-00	METAL CHIP	68K 5%	1/10W
R120	1-216-073-00	METAL CHIP	10K 5%	1/10W
R121	1-216-049-11	METAL GLAZE	1K 5%	1/10W
R122	1-216-073-00	METAL CHIP	10K 5%	1/10W
R123	1-216-093-00	METAL CHIP	68K 5%	1/10W

MAIN

Ref.No.	Part No.	Description			Remark
R124	1-216-129-00	METAL CHIP	2.2M	5%	1/10W
R130	1-216-073-00	METAL CHIP	10K	5%	1/10W
R131	1-216-049-11	METAL GLAZE	1K	5%	1/10W
R132	1-216-073-00	METAL CHIP	10K	5%	1/10W
R133	1-216-093-00	METAL CHIP	68K	5%	1/10W
R134	1-216-129-00	METAL CHIP	2.2M	5%	1/10W
R201	1-216-109-00	METAL CHIP	330K	5%	1/10W
R202	1-216-109-00	METAL CHIP	330K	5%	1/10W
R203	1-216-079-00	METAL CHIP	18K	5%	1/10W
R204	1-216-076-00	METAL CHIP	13K	5%	1/10W
R205	1-216-109-00	METAL CHIP	330K	5%	1/10W
R208	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R209	1-216-093-00	METAL CHIP	68K	5%	1/10W
R220	1-216-073-00	METAL CHIP	10K	5%	1/10W
R221	1-216-049-11	METAL GLAZE	1K	5%	1/10W
R222	1-216-073-00	METAL CHIP	10K	5%	1/10W
R223	1-216-093-00	METAL CHIP	68K	5%	1/10W
R224	1-216-129-00	METAL CHIP	2.2M	5%	1/10W
R230	1-216-073-00	METAL CHIP	10K	5%	1/10W
R231	1-216-049-11	METAL GLAZE	1K	5%	1/10W
R232	1-216-073-00	METAL CHIP	10K	5%	1/10W
R233	1-216-093-00	METAL CHIP	68K	5%	1/10W
R234	1-216-129-00	METAL CHIP	2.2M	5%	1/10W
R251	1-216-113-00	METAL CHIP	470K	5%	1/10W
R252	1-216-109-00	METAL CHIP	330K	5%	1/10W
R253	1-216-097-00	METAL CHIP	100K	5%	1/10W
R254	1-216-085-00	METAL CHIP	33K	5%	1/10W
R255	1-216-079-00	METAL CHIP	18K	5%	1/10W
R256	1-216-079-00	METAL CHIP	18K	5%	1/10W
R257	1-216-222-00	METAL GLAZE	10K	5%	1/8W
R258	1-216-073-00	METAL CHIP	10K	5%	1/10W
R259	1-216-073-00	METAL CHIP	10K	5%	1/10W
R260	1-249-429-11	CARBON	10K	5%	1/4W
R310	1-216-017-00	METAL CHIP	47	5%	1/10W
R401	1-216-049-11	METAL GLAZE	1K	5%	1/10W
R402	1-249-389-11	CARBON	4.7	5%	1/4W
R403	1-249-389-11	CARBON	4.7	5%	1/4W
R404	1-216-073-00	METAL CHIP	10K	5%	1/10W
R405	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R501	1-216-073-00	METAL CHIP	10K	5%	1/10W
R502	1-216-081-00	METAL CHIP	22K	5%	1/10W
R503	1-216-246-00	METAL GLAZE	100K	5%	1/8W
R504	1-216-081-00	METAL CHIP	22K	5%	1/10W
R506	1-249-421-11	CARBON	2.2K	5%	1/4W
R507	1-249-421-11	CARBON	2.2K	5%	1/4W
R508	1-249-421-11	CARBON	2.2K	5%	1/4W
R509	1-216-073-00	METAL CHIP	10K	5%	1/10W
R510	1-216-246-00	METAL GLAZE	100K	5%	1/8W
R511	1-216-073-00	METAL CHIP	10K	5%	1/10W
R512	1-216-097-00	METAL CHIP	100K	5%	1/10W
R513	1-216-246-00	METAL GLAZE	100K	5%	1/8W
R514	1-216-097-00	METAL CHIP	100K	5%	1/10W
R515	1-216-097-00	METAL CHIP	100K	5%	1/10W
R516	1-216-097-00	METAL CHIP	100K	5%	1/10W
R517	1-216-097-00	METAL CHIP	100K	5%	1/10W
R518	1-216-097-00	METAL CHIP	100K	5%	1/10W
R519	1-216-097-00	METAL CHIP	100K	5%	1/10W
R520	1-216-097-00	METAL CHIP	100K	5%	1/10W
R522	1-249-421-11	CARBON	2.2K	5%	1/4W
R523	1-249-421-11	CARBON	2.2K	5%	1/4W
R524	1-249-421-11	CARBON	2.2K	5%	1/4W
R525	1-249-421-11	CARBON	2.2K	5%	1/4W
R530	1-216-073-00	METAL CHIP	10K	5%	1/10W
R534	1-216-097-00	METAL CHIP	100K	5%	1/10W
R535	1-216-073-00	METAL CHIP	10K	5%	1/10W
R536	1-216-073-00	METAL CHIP	10K	5%	1/10W
R570	1-216-049-11	METAL GLAZE	1K	5%	1/10W
R575	1-247-807-11	CARBON	100	5%	1/4W
R576	1-247-807-11	CARBON	100	5%	1/4W
R577	1-247-807-11	CARBON	100	5%	1/4W
R582	1-216-186-00	METAL GLAZE	330	5%	1/8W
R587	1-216-687-11	METAL CHIP	33K	0.5%	1/10W
R588	1-216-687-11	METAL CHIP	33K	0.5%	1/10W
R589	1-216-687-11	METAL CHIP	33K	0.5%	1/10W
R590	1-216-687-11	METAL CHIP	33K	0.5%	1/10W
R650	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R651	1-216-073-00	METAL CHIP	10K	5%	1/10W
R652	1-216-097-00	METAL CHIP	100K	5%	1/10W
R653	1-216-089-00	METAL CHIP	47K	5%	1/10W
R654	1-216-089-00	METAL CHIP	47K	5%	1/10W
R655	1-216-085-00	METAL CHIP	33K	5%	1/10W
R660	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R661	1-216-695-11	METAL CHIP	68K	0.5%	1/10W
R662	1-208-806-11	METAL CHIP	10K	0.50%	1/10W
R901	1-249-429-11	CARBON	10K	5%	1/4W
R902	1-249-429-11	CARBON	10K	5%	1/4W
R911	1-249-385-11	CARBON	2.2	5%	1/6W
R912	1-249-385-11	CARBON	2.2	5%	1/6W
R913	1-249-385-11	CARBON	2.2	5%	1/6W
R914	1-249-385-11	CARBON	2.2	5%	1/6W
R921	1-249-385-11	CARBON	2.2	5%	1/6W
R922	1-249-385-11	CARBON	2.2	5%	1/6W
R923	1-249-385-11	CARBON	2.2	5%	1/6W
R924	1-249-385-11	CARBON	2.2	5%	1/6W

< VARIABLE RESISTOR >

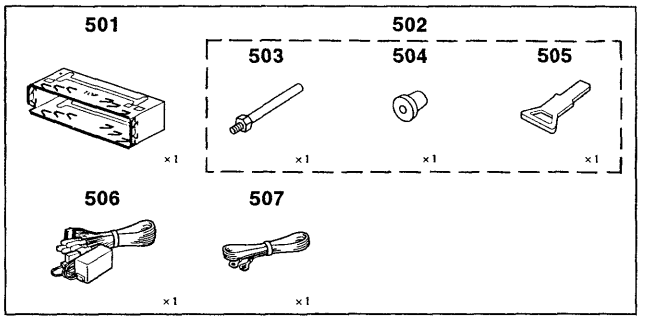
RV101	1-238-597-11	RES, ADJ, CARBON 1K (DOLBY ADJ (L))
RV201	1-238-597-11	RES, ADJ, CARBON 1K (DOLBY ADJ (R))

MAIN REEL SENSOR

Ref. No.	Part No.	Description	Remark
		< SWITCH >	
S501	1-571-478-11	SWITCH, SLIDE (P-SEL. SW)	
S550	1-692-431-21	SWITCH, TACTILE (RESET SW)	
		< TUNER UNIT >	
TU1	A-3282-011-A	TUNER UNIT TUX-005A	
		< VIBRATOR >	
X501	1-578-785-11	VIBRATOR, CRYSTAL (4.5MHz)	
**********			
	1-589-604-11	REEL SENSOR BOARD	
		**********	
		< SWITCH >	
S901	1-692-885-12	SWITCH, ROTARY SLIDE (TAPE OPERATION)	
**********			
		MISCELLANEOUS	
		**********	
15	1-765-082-11	CORD (WITH CONNECTOR) (POWER, SPEAKER) (including F901, 902)	
130	1-765-460-12	CORD (WITH CONNECTOR)	
F901	1-533-326-11	FUSE (BLADE TYPE) (AUTO FUSE) (3A)	
F902	1-533-331-11	FUSE (BLADE TYPE) (AUTO FUSE) (15A)	
HP901	1-500-196-11	HEAD, MAGNETIC (PLAYBACK)	
M901	X-3368-684-1	MOTOR ASSY, MAIN	
M902	X-3368-685-1	MOTOR ASSY, SUB	
S901	1-692-885-11	SWITCH, ROTARY SLIDE	
**********			
		ACCESSORIES & PACKING MATERIALS	
		**********	
	1-765-082-11	CORD (WITH CONNECTOR) (POWER, SPEAKER) (including F901, 902)	
	3-375-373-01	SPRING (RELEASE)	
	3-798-550-41	MANUAL, INSTRUCTION (ENGLISH/POLISH/BULGARIAN/HUNGARIAN/RUSSIAN)	
	3-798-551-41	MANUAL, INSTRUCTION, INSTALL (ENGLISH/POLISH/BULGARIAN/HUNGARIAN/RUSSIAN)	
	X-3369-665-1	CASE ASSY	
**********			

Ref. No.	Part No.	Description	Remark
		**********	
		HARDWARE LIST	
		**********	
#1	7-621-772-10	SCREW +B 2×4	
#2	7-621-773-87	SCREW +PTT 2.6×10 (S)	
#3	7-685-106-19	SCREW +P 2×10 TYPE2 NON-SLIT	
#4	7-627-553-17	PRECISION SCREW +P 2×2 TYPE 3	
#5	7-628-253-05	SCREW +PS 2×4	
#6	7-624-104-04	STOP RING 2.0, TYPE -E	
**********			

MOUNTING HARDWARE



* 501	3-916-161-01	FRAME, FITTING	
502	X-3370-077-1	SCREW ASSY (KEY), FITTING	
503	3-386-828-01	SCREW, FITTING	
504	3-349-410-01	BUSHING	
505	3-388-078-01	KEY	
506	1-765-082-11	CORD (WITH CONNECTOR) (POWER, SPEAKER) (including F901, 902)	
507	1-575-616-41	CORD (WITH TERMINAL)	

9-960-047-11

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